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Legislation

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<sup>(1)</sup> Text with EEA relevance.

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(Non-legislative acts)

# REGULATIONS

# COMMISSION DELEGATED REGULATION (EU) 2019/2013

# of 11 March 2019

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of electronic displays and repealing Commission Delegated Regulation (EU) No 1062/2010

# (Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 28 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (<sup>1</sup>), and in particular Article 11(5) and Article 16 thereof,

Whereas:

- (1) Regulation (EU) 2017/1369 empowers the Commission to adopt delegated acts as regards the labelling or rescaling of the labelling of product groups representing significant potential for saving energy and, where relevant, other resources.
- (2) Provisions on the energy labelling of televisions were established by Commission Delegated Regulation (EU) No 1062/2010 (<sup>2</sup>).
- (3) The Communication from the Commission COM(2016) 773 final <sup>(3)</sup> (ecodesign working plan), established by the Commission in application of Article 16(1) of Directive 2009/125/EC of the European Parliament and of the Council (<sup>4</sup>), sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measure, as well as the review of Commission Regulation (EC) No 642/2009 (<sup>5</sup>) and of Delegated Regulation (EU) No 1062/2010.
- (4) Measures from the ecodesign working plan have an estimated potential to deliver in total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Electronic displays are one of the product groups listed in the working plan.
- (5) Televisions are among the product groups mentioned in Article 11(5)(b) of Regulation (EU) 2017/1369 for which the Commission should adopt a delegated act introducing an A to G rescaled label.
- (6) Delegated Regulation (EU) No 1062/2010 required the Commission to review the regulation in light of technological progress.

<sup>(1)</sup> OJ L 198, 28.7.2017, p. 1.

<sup>(&</sup>lt;sup>2</sup>) Commission Delegated Regulation (EU) No 1062/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of televisions (OJ L 314, 30.11.2010, p. 64).

<sup>(3)</sup> Communication from the Commission. Ecodesign working plan 2016-2019 COM(2016)773 final, 30.11.2016.

<sup>(\*)</sup> Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10).

<sup>(5)</sup> Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions (OJ L 191, 23.7.2009, p. 42).

- (7) The Commission has reviewed Regulation (EU) No 1062/2010 as required by its Article 7 and analysed technical, environmental and economic aspects of televisions and other electronic displays, including monitors and signage displays as well as the real-life user understanding and behaviour in respect to different labelling elements. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 14 of Regulation (EU) 2017/1369.
- (8) It appears from the review that the same requirements for televisions should also apply to monitors because of the rapidly increasing functionality overlap between displays and televisions. Moreover, digital signage displays are specifically listed in the Commission's 2016-2019 ecodesign working plan to be taken up in the revision of the existing regulations for televisions. The scope of this Regulation should thus comprise electronic displays including televisions, monitors and digital signage displays.
- (9) The annual energy consumption in 2016 of televisions in the Union constituted more than 3 % of the Union's electricity consumption. The projected energy consumption of televisions, monitors and digital signage displays, in a business as usual scenario, is expected be close to 100 TWh/yr in 2030. This Regulation, together with the accompanying ecodesign regulation, is estimated to reduce the annual final energy consumption up to 39 TWh/yr by 2030.
- (10) The high dynamic range (HDR) encoding function may lead to a different energy use, suggesting a separate energy efficiency indication for such a function.
- (11) The information provided on the label for the electronic displays in the scope of this Regulation should be obtained through reliable, accurate and repeatable measurement procedures, which take into account the recognised state of the art measurement methods including, where available, harmonised standards adopted by the European standardisation organisations, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>6</sup>).
- (12) Recognising the growth of sales of energy-related products through internet hosting platforms, rather than directly from suppliers' or dealers' websites, it should be clarified that internet sales platforms should be responsible for enabling the displaying of the label provided by the supplier in proximity to the price. They should inform the dealer of that obligation, but should not be responsible for the accuracy or content of the label and the product information sheet provided. However, in application of Article 14(1)(b) of Directive 2000/31/EC of the European Parliament and of the Council (<sup>7</sup>) on electronic commerce, such internet hosting platforms should act expeditiously to remove or to disable access to information about the product information if they are aware of the non-compliance (e.g. missing, incomplete or incorrect label or product information sheet) for example if informed by the market surveillance authority. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.
- (13) Electronic displays that are displayed at trade fairs should bear the energy label if the first unit of the model has already been placed on the market or is placed on the market at the trade fair.
- (14) To improve the effectiveness of this Regulation, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited.
- (15) The measures provided for in this Regulation were discussed by the Consultation Forum and the Member States' experts in accordance with Article 14 of Regulation (EU) 2017/1369.
- (16) Delegated Regulation (EU) No 1062/2010 should be repealed,

<sup>(\*)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(&</sup>lt;sup>7</sup>) Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (OJ L 178, 17.7.2000, p. 1).

# HAS ADOPTED THIS REGULATION:

# Article 1

# Subject matter and scope

1. This Regulation establishes requirements for the labelling of, and the provision of supplementary product information on electronic displays, including televisions, monitors and digital signage displays.

- 2. This Regulation shall not apply to the following:
- (a) any electronic display with a screen area smaller than or equal to 100 square centimetres;
- (b) projectors;
- (c) all-in-one video conference systems;
- (d) medical displays;
- (e) virtual reality headsets;
- (f) displays integrated or to be integrated into products listed in points 3(a) and 4 of Article 2 of Directive 2012/19/EU of the European Parliament and of the Council (<sup>8</sup>);
- (g) electronic displays that are components or subassemblies of products covered by implementing measures adopted under Directive 2009/125/EC;
- (h) broadcast displays;
- (i) security displays;
- (j) digital interactive whiteboards;
- (k) digital photo frames;
- (l) digital signage displays which meet any of the following characteristics:
  - (1) designed and constructed as a display module to be integrated as a partial image area of a larger display screen area and not intended for use as a standalone display device;
  - (2) distributed self-contained in an enclosure for permanent outdoor use;
  - (3) distributed self-contained in an enclosure with a screen area less than 30 dm<sup>2</sup> or greater than 130 dm<sup>2</sup>;
  - (4) the display has a pixel density less than 230 pixels/cm<sup>2</sup> or more than 3 025 pixels/cm<sup>2</sup>;
  - (5) a peak white luminance in standard dynamic range (SDR) operating mode of greater than or equal to 1 000 cd/m<sup>2</sup>;
  - (6) no video signal input interface and display drive allowing the correct display of a standardised dynamic video test sequence for power measurement purposes;
- (m) status displays;
- (n) control panels.

<sup>(8)</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), (OJ L 197, 24.7.2012, p. 38).

## Article 2

#### Definitions

For the purpose of this Regulation the following definitions shall apply:

- (1) 'electronic display' means a display screen and associated electronics that, as its primary function, displays visual information from wired or wireless sources;
- (2) 'television' means an electronic display designed primarily for the display and reception of audiovisual signals and which consists of an electronic display and one or more tuners/receivers;
- (3) 'tuner/receiver' means an electronic circuit that detects television broadcast signal, such as terrestrial digital or satellite, but not internet unicast, and facilitates the selection of a TV channel from a group of broadcast channels;
- (4) 'monitor' or 'computer monitor' or 'computer display' means an electronic display intended for one person for close viewing such as in a desk based environment;
- (5) 'digital photo frame' means an electronic display that displays exclusively still visual information;
- (6) '*projector*' means an optical device for processing analogue or digital video image information, in any format, to modulate a light source and project the resulting image onto an external surface;
- (7) 'status display' means a display used to show simple but changing information such as selected channel, time or power consumption. A simple light indicator is not considered a status display;
- (8) 'control panel' means an electronic display whose main function is to display images associated with product operational status; it may provide user interaction by touch or other means to control the product operation. It may be integrated into products or specifically designed and marketed to be used exclusively with the product;
- (9) *'all-in-one video conference system'* means a dedicated system designed for video conferencing and collaboration, integrated within a single enclosure, whose specifications shall include all of the following features:
  - (a) support for specific videoconference protocol ITU-T H.323 or IETF SIP as delivered by the manufacturer;
  - (b) camera(s), display and processing capabilities for two-way real-time video including packet loss resilience;
  - (c) loudspeaker and audio processing capabilities for two-way real-time hands-free audio including echo cancellation;
  - (d) an encryption function;
  - (e) HiNA;
- (10) 'HiNA' means High Network Availability as defined in Article 1 of Commission Regulation (EC) No 1275/2008 (9);
- (11) 'broadcast display' means an electronic display designed and marketed for professional use by broadcasters and video production houses for video content creation. Its specifications shall include all of the following features:
  - (a) colour calibration function;

<sup>(&</sup>lt;sup>9</sup>) Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p. 45).

- (b) input signal analysis function for input signal monitoring and error detection, such as wave-form monitor/vector scope, RGB cut off, facility to check the video signal status at actual pixel resolution, interlace mode and screen marker;
- (c) Serial Digital Interface (SDI) or Video over internet Protocol (VoIP) integrated with the product;
- (d) not intended for use in public areas;
- (12) 'digital interactive whiteboard' means an electronic display which allows direct user interaction with the displayed image. The digital interactive whiteboard is designed primarily to provide presentations, lessons or remote collaboration, including the transmission of audio and video signals. Its specification shall include all of the following features:
  - (a) primarily designed to be installed hanging, mounted on a ground stand, set on a shelf or desktop or fixed to a physical structure for viewing by multiple people;
  - (b) be necessarily used with computer software with specific functionalities to manage content and interaction;
  - (c) integrated or designed to be specifically used with a computer for running the software in point (b);
  - (d) a display screen area greater than 40 dm<sup>2</sup>;
  - (e) user interaction by finger or pen touch or other means such as hand, arm gesture or voice;
- (13) 'security display' means an electronic display whose specification shall include all of the following features:
  - (a) self-monitoring function capable of communicating at least one of the following information to a remote server:
    - power status;
    - internal temperature from anti-overload thermal sensing;
    - video source;
    - audio source and audio status (volume/mute);
    - model and firmware version;
  - (b) user-specified specialist form factor facilitating the installation of the display into professional housings or consoles;
- (14) 'digital signage display' means an electronic display that is designed primarily to be viewed by multiple people in non-desktop based and non-domestic environments. Its specifications shall include all of the following features:
  - (a) unique identifier to enable addressing a specific display screen;
  - (b) a function disabling unauthorised access to the display settings and displayed image;
  - (c) network connection (encompassing a hard-wired or wireless interface) for controlling, monitoring or receiving the information to display from remote unicast or multicast but not broadcast sources;
  - (d) designed to be installed hanging, mounted or fixed to a physical structure for viewing by multiple people and not placed on the market with a ground stand;
  - (e) does not integrate a tuner to display broadcast signals;

- (15) 'integrated', referring to a display which is part of another product as a functional component, means electronic displays that are not able to be operated independently from the product and that depend on it for providing their functions, including power;
- (16) 'medical display' means an electronic display covered by the scope of:
  - (a) Council Directive 93/42/EEC (10) concerning medical devices; or
  - (b) Regulation (EU) 2017/745 of the European Parliament and of the Council (11) on medical devices; or
  - (c) Council Directive 90/385/EEC (<sup>12</sup>) on the approximation of the laws of the Member States relating to active implantable medical devices; or
  - (d) Directive 98/79/EC of the European Parliament and of the Council (13) on in vitro diagnostic medical devices; or
  - (e) Regulation (EU) 2017/746 of the European Parliament and of the Council (14) on in vitro diagnostic medical devices;
- (17) 'grade 1 monitor' means a monitor for high-level technical quality evaluation of images at key points in a production or broadcast workflow, such as image capture, post- production, transmission and storage;
- (18) 'screen area' means the viewable area of the electronic display calculated by multiplying the maximum viewable image width by the maximum viewable image height along the surface of the panel (both flat or curved);
- (19) 'virtual reality headset' means a head-wearable device that provides immersive virtual reality for the wearer by displaying stereoscopic images for each eye with head motion tracking functions;
- (20) 'point of sale' means a location where electronic displays are displayed or offered for sale, hire or hire-purchase.

# Article 3

# **Obligations of suppliers**

- 1. Suppliers shall ensure that:
- (a) each electronic display is supplied with a label in printed form in the format and containing the information set out in Annex III;
- (b) the parameters of the product information sheet, as set out in Annex V, are entered into the product database;
- (c) if specifically requested by the dealer, the product information sheet shall be made available in printed form;
- (d) the content of the technical documentation, as set out in Annex VI, is entered into the product database;

<sup>(10)</sup> Council Directive 93/42/EEC of 14 June 1993 concerning medical devices (OJ L 169, 12.7.1993, p. 1).

<sup>(&</sup>lt;sup>11</sup>) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).

<sup>(12)</sup> Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (OJ L 189, 20.7.1990, p. 17).

<sup>(&</sup>lt;sup>13</sup>) Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices (OJ L 331, 7.12.1998, p. 1).

<sup>(14)</sup> Regulation (EU) 2017/746 of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU (OJ L 117, 5.5.2017, p. 176).

- (e) any visual advertisement for a specific model of electronic display, including on the internet, contains the energy efficiency class and the range of efficiency classes available on the label in accordance with Annex VII and Annex VIII;
- (f) any technical promotional material concerning a specific model of electronic display, including on the internet, which describes its specific technical parameters, includes the energy efficiency class of that model and the range of efficiency classes available on the label, in accordance with Annex VII;
- (g) an electronic label, in the format and containing the information as set out in Annex III, shall be made available to dealers for each electronic display model;
- (h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each electronic display model;
- (i) in addition to point (a), the label shall be printed on the packaging or stuck on it.
- 2. The energy efficiency class shall be based on the energy efficiency index calculated in accordance with Annex II.

#### Article 4

# **Obligations of dealers**

Dealers shall ensure that:

- (a) each electronic display, at the point of sale, including at trade fairs, bears the label provided by suppliers in accordance with point 1(a) of Article 3 displayed on the front of the appliance or hung on it or placed in such a way as to be clearly visible and unequivocally associated to the specific model; provided that the electronic display is kept in on-mode when visible to customers for sale, the electronic label in accordance with point 1(g) of Article 3 displayed on the screen may replace the printed label;
- (b) where an electronic display model is displayed in a point of sale without any unit displayed out of the box, the label printed on the box or stuck on it shall be visible;
- (c) in the event of distance selling or telemarketing, the label and product information sheet are provided in accordance with Annexes VII and VIII;
- (d) any visual advertisement for a specific model of electronic display, including on the internet, contains the energy efficiency class and the range of efficiency classes available on the label, in accordance with Annex VII;
- (e) any technical promotional material concerning a specific model of electronic display, including technical promotional material on the internet, which describes its specific technical parameters, includes the energy efficiency class of that model and the range of efficiency classes available on the label, in accordance with Annex VII.

# Article 5

# Obligations of service provider on internet hosting platforms

Where a hosting service provider, as referred to in Article 14 of Directive 2000/31/EC, allows the selling of electronic displays through its internet website, the service provider shall enable the showing of the electronic label and electronic product information sheet provided by the dealer on the display mechanism in accordance with the provisions of Annex VIII and shall inform the dealer of the obligation to display them.

# Article 6

#### Measurement methods

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation methods set out in Annex IV.

# Article 7

# Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IX when performing the market surveillance checks referred to in paragraph 3 of Article 8 of Regulation (EU) 2017/1369.

#### Article 8

#### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2022.

The review shall in particular assess the following:

(a) whether it is or is still appropriate to have separate energy categorisations for SDR and HDR;

(b) the verification tolerances set out in Annex IX;

(c) whether other electronic displays should be included in the scope;

(d) the appropriateness of the balance of stringency between larger and smaller products;

(e) whether it is feasible to develop appropriate notification methods for the energy consumption;

(f) the possibility to address circular economy aspects.

In addition, the Commission shall review the label to rescale it when the requirements of Article 11 of Regulation (EU) 2017/1369 are met.

# Article 9

# Repeal

Delegated Regulation (EU) No 1062/2010 is repealed as of 1 March 2021.

# Article 10

# **Transitional measures**

As from 25 December 2019 until 28 February 2021, the product fiche required under point 1(b) of Article 3 of Regulation (EU) No 1062/2010 may be made available through the product database instead of being provided in printed form with the product. In that case the supplier shall ensure that if, specifically requested by the dealer, the product fiche shall be made available in printed form.

#### Article 11

# Entry into force and application

This Regulation shall enter into force on the twentieth day following its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, point 1(a) of Article 3 shall apply from 1 November 2020.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 11 March 2019.

For the Commission The President Jean-Claude JUNCKER

#### ANNEX I

#### Definitions for the purposes of the Annexes

The following definitions shall apply:

- (1) 'energy efficiency index' (EEI) means an index number for the relative energy efficiency of an electronic display, as set out in point B of Annex II;
- (2) 'High Dynamic Range (HDR)' means a method to increase the contrast ratio of the image of an electronic display by using metadata generated during the creation of the video material and that the display management circuitry interprets to produce a contrast ratio and colour rendering perceived by the human eye as more realistic than that achieved by non HDR-compatible displays;
- (3) 'contrast ratio' means the difference between the peak brightness and black level in an image;
- (4) 'luminance' means the photometric measure of the luminous intensity per unit area of light traveling in a given direction, expressed in units of candelas per square meter (cd/m<sup>2</sup>). The term brightness is often used to 'subjectively' qualify the luminance of an electronic display;
- (5) 'Automatic Brightness Control (ABC)' means the automatic mechanism that, when enabled, controls the brightness of an electronic display as a function of the ambient light level illuminating the front of the display;
- (6) 'default', referring to a specific feature or setting, means the value of a specific feature as set at the factory and available when the customer uses the product for the first time and after performing a 'reset to factory settings' action, if allowed by the product;
- (7) 'pixel (picture element)' means the area of the smallest element of a picture that can be distinguished from its neighbouring elements;
- (8) 'on mode' or 'active mode' means a condition in which the electronic display is connected to a power source, has been activated and is providing one or more of its display functions;
- (9) 'forced menu' means a specific menu, appearing upon initial start-up of the electronic display or upon a reset to factory settings, offering a set of display settings, pre-defined by the supplier;
- (10) 'normal configuration' means a display setting which is recommended to the end-user by the supplier from the initial set up menu or the factory setting that the electronic display has for the intended product use. It must deliver the optimal quality for the end user in the intended environment and for the intended use. The normal configuration is the condition in which the values for off, standby, networked standby and on mode are measured;
- (11) 'brightest on mode configuration' means the configuration of the electronic display, pre-set by the supplier, which provides an acceptable picture with the highest measured luminance;
- (12) 'shop configuration' means the configuration of the electronic display for use specifically in the context of demonstrating the electronic display, for example in high illumination (retail) conditions and not involving an auto poweroff if no user action or presence is detected;
- (13) 'room presence sensor' or 'gesture detection sensor' or 'occupancy sensor' means a sensor monitoring and reacting to movements in the space around the product whose signal can trigger the switching to on mode. Lack of movement detection for a predetermined time can be used to switch into standby mode or networked standby mode;
- (14) 'off mode' means a condition in which the electronic display is connected to the mains power source and is not providing any function: the following shall also be considered as off mode:
  - (1) conditions providing only an indication of off mode condition;
  - (2) conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council (<sup>1</sup>);

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

- (15) 'standby mode' means a condition where the electronic display is connected to the mains or DC power source, depends on energy input from that source to work as intended and provides only the following functions, which may persist for an indefinite time:
  - reactivation function, or reactivation function and only an indication of enabled reactivation function; and/or

- information or status display;

- (16) 'reactivation function' means a function that via a remote switch, a remote control unit, an internal sensor, a timer or, for networked displays in networked standby mode, the network, provides a switch from standby mode or networked standby mode to a mode, other than off-mode, providing additional functions;
- (17) 'display mechanism' means any screen, including tactile screen or other visual technology used for displaying internet content to users;
- (18) 'nested display' means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (19) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (20) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in nongraphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications;
- (21) 'External Power Supply (EPS)' means a device as defined in Commission Regulation (EU) 2019/1782 (2);
- (22) 'standardised EPS' means an external power supply designed to provide power to various devices and that is complies with a standard issued by an international standardization organization;
- (23) 'Quick Response (QR) code' means a matrix barcode included on the energy label of a product model that links to that model's information in the public part of the product database;
- (24) 'network' means a communication infrastructure with a topology of links and an architecture that includes the physical components, organisational principles and communication procedures and formats (protocols);
- (25) 'network interface' (or 'network port') means a wired or wireless physical interface, providing network connection, through which functions of the electronic display can be remotely activated and data received or sent. Interfaces to input data such as video and audio signals, but not originating from a network source and using a network address, are not considered to be a network interface;
- (26) 'network availability' means the capability of an electronic display to activate functions after a remotely initiated trigger has been detected by a network interface;
- (27) 'networked display' means an electronic display that can connect to a network using one of its network interfaces, if enabled;
- (28) 'networked standby mode' means a condition in which the electronic display is able to resume a function by way of a remotely initiated trigger from a network interface.

<sup>(&</sup>lt;sup>2</sup>) Commission Regulation (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 278/2009 (OJ L 272, 25.10.2019, p. 95).

#### ANNEX II

# A. Energy efficiency classes

The energy efficiency class of an electronic display shall be determined on the basis of its energy efficiency index for labelling  $(EEI_{label})$  as set out in Table 1. The  $EEI_{label}$  of an electronic display shall be determined in accordance with part B of this Annex.

 Table 1

 Energy efficiency classes of electronic displays

| Energy Efficiency Class | Energy Efficiency Index (EEI <sub>label</sub> ) |
|-------------------------|-------------------------------------------------|
| Α                       | EEI <sub>label</sub> < 0,30                     |
| В                       | $0,30 \leq EEI_{label} < 0,40$                  |
| С                       | $0,40 \le EEI_{label} < 0,50$                   |
| D                       | $0.50 \le EEI_{label} \le 0.60$                 |
| E                       | $0,60 \le EEI_{label} < 0,75$                   |
| F                       | $0.75 \leq EEI_{label} < 0.90$                  |
| G                       | $0,90 \leq EEI_{label}$                         |

# B. Energy Efficiency Index (EEI<sub>label</sub>)

The Energy Efficiency Index (EEI<sub>label</sub>) of the electronic display shall be calculated using the following equation:

$$EEI_{label} = \frac{(P_{measured} + 1)}{(3 \times [90 \times tanh(0,025 + 0,0035 \times (A - 11) + 4)] + 3) + corr_l}$$

where:

A represents the viewing surface area in dm<sup>2</sup>;

P<sub>measured</sub> is the measured power in on mode in Watts in the normal configuration and set as indicated in Table 2;

*corr*<sub>l</sub> is a correction factor set as indicated in Table 3.

| Tal | ble | 2 |
|-----|-----|---|
|     |     | - |

Measurement of P<sub>measured</sub>

| Dynamic Range level                                    | P <sub>measured</sub>                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standard Dynamic Range (SDR): Pmeasured <sub>SDR</sub> | Power demand in Watts (W) in on mode, measured when displaying standardised test sequences of moving picture from dynamic broadcast content. Where allowances are applicable according to part C of this Annex, they should be deducted from $P_{measured}$ .                                 |
| High Dynamic Range (HDR)<br>Pmeasured <sub>HDR</sub>   | Power demand in Watts (W) in on mode, measured as for $Pmeasured_{SDR}$ but with the HDR functionality activated by metadata in the standard-<br>ised HDR test sequences. Where allowances are applicable according to<br>part C of this Annex, they should be deducted from $P_{measured}$ . |

# Table 3

# corr<sub>l</sub> value

| Electronic Display type | corr <sub>l</sub> value                                                                                                                                                                                |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Television              | 0,0                                                                                                                                                                                                    |
| Monitor                 | 0,0                                                                                                                                                                                                    |
| Digital signage         | 0,00062*(lum-500)*A<br>where 'lum' is the peak white luminance, in cd/m <sup>2</sup> , of the brightest on mode<br>configuration of the electronic display and A is the screen area in dm <sup>2</sup> |

# C. Allowances and adjustments for the purpose of the EEI<sub>label</sub> calculation

Electronic displays with automatic brightness control (ABC) shall qualify for a 10 % reduction in  $P_{measured}$  if they meet all of the following requirements:

- (a) ABC is enabled in the normal configuration of the electronic display and persists in any other standard dynamic range configuration available to the end user;
- (b) the value of  $P_{measured}$ , in the normal configuration, is measured, with ABC disabled or if ABC cannot be disabled, in an ambient light condition of 100 lux measured at the ABC sensor;
- (c) if applicable, the value of  $P_{measured}$  with ABC disabled shall be equal to or greater than the on mode power measured with ABC enabled in an ambient light condition of 100 lux measured at the ABC sensor;
- (d) with ABC enabled, the measured value of the on mode power must decrease by 20 % or more when the ambient light condition, measured at the ABC sensor, is reduced from 100 lux to 12 lux;
- (e) the ABC control of the display screen luminance meets all of the following characteristics when the ambient light condition measured at the ABC sensor changes:
  - the measured screen luminance at 60 lux is between 65% and 95% of the screen luminance measured at 100 lux;
  - the measured screen luminance at 35 lux is between 50 % and 80 % of the screen luminance measured at 100 lux;
  - the measured screen luminance at 12 lux is between 35 % and 70 % of the screen luminance measured at 100 lux.

# ANNEX III

# Label for electronic displays

1. LABEL



The following information shall be included in the label for electronic displays:

- I. QR code;
- II. supplier's name or trade mark;
- III. supplier's model identifier;
- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with point B of Annex II when using Pmeasured<sub>SDR</sub>;
- VI. on mode energy consumption in kWh per 1 000 h, when playing SDR content, rounded to the nearest integer;
- VII. the energy efficiency class determined in accordance with point B of Annex II when using Pmeasured<sub>HDR</sub>;
- VIII. the on mode energy consumption in kWh per 1 000 h, when playing HDR content, rounded to the nearest integer;
- IX. visible screen diagonal in centimetres and inches and horizontal and vertical resolution in pixels;
- X. the number of this Regulation, that is '2019/2013'.

# 2. LABEL DESIGN



Whereby:

- (a) The label shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above. For electronic displays with a size of the diagonal of the visible area less than 127 cm (50 inches), the label can be printed scaled down, but not less than 60 % of its normal size; its content shall nevertheless be proportionate to the specifications above and the QR code still readable by a commonly available QR reader, such as those integrated in a smartphone.
- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.
- (d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label design.
- (e) Colours shall be CMYK cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.

- (f) The label shall fulfil all the following requirements (numbers refer to the figure above):
  - 1 the colours of the EU logo shall be as follows:
    - the background: 100,80,0,0;
    - the stars: 0,0,100,0;
  - **2** the colour of the energy logo shall be: 100,80,0,0;
  - **3** the QR code shall be 100 % black;
  - the supplier's name shall be 100 % black and in Verdana Bold 9 pt;
  - **6** the model identifier shall be 100 % black and in Verdana Regular 9 pt;
  - 6 the A to G scale shall be as follows:
    - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrows;
    - the colours of the A to G scale arrows shall be as follows:
      - A-class: 100,0,100,0;
      - B-class: 70,0,100,0;
      - C-class: 30,0,100,0;
      - D-class: 0,0,100,0;
      - E-class: 0,30,100,0;
      - F-class: 0,70,100,0;
      - G-class: 0,100,100,0;
  - the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
  - It he letter of the energy efficiency class shall be 100 % white and in Calibri Bold 33 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;
  - the energy consumption value in SDR shall be in Verdana Bold 28 pt; 'kWh/1 000h' shall be in Verdana Regular 16 pt. The text shall be centred and in 100 % black;
  - **(** the HDR and the screen pictograms shall be 100 % black and as shown as in the label design; the texts (numbers and units) shall be 100 % black, and as follows:
    - above the HDR pictogram, the letters of energy efficiency classes (A to G) shall be centred, with the letter of the applicable energy efficiency class in Verdana Bold 16 pt and the other letters in Verdana Regular 10 pt; under the HDR pictogram, the energy consumption value in HDR shall be centred, in Verdana Bold 16 pt with 'kWh/1 000h' in Verdana Regular 10 pt;
    - the texts of the screen pictogram shall be in Verdana Regular 9 pt and placed as in the label design;

**1** the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

#### ANNEX IV

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, the reference numbers of which have been published in the *Official Journal of the European Union* or using other reliable, accurate and reproducible methods which take into account the generally recognised state-of-the-art. They shall be in line with the provisions set out in this Annex.

Measurements and calculations shall meet the technical definitions, conditions, equations and parameters set out in this Annex. Electronic displays which can operate in both 2D and 3D modes shall be tested when they operate in 2D mode.

An electronic display which is split into two or more physically separate units, but placed on the market in a single package, shall, for checking the conformity with the requirements of this Annex, be treated as a single electronic display. Where multiple electronic displays that can be placed on the market separately are combined in a single system, the individual electronic displays shall be treated as single displays.

# 1. MEASUREMENTS OF ON MODE POWER DEMAND

Measurements of the on mode power demand shall fulfil all of the following general conditions:

- (a) electronic displays shall be measured in the normal configuration;
- (b) measurements shall be made at an ambient temperature of 23 °C +/- 5 °C;
- (c) measurements shall be made using a dynamic broadcast video signal test loops representing typical broadcast content for electronic displays in standard dynamic range (SDR). For the HDR measurement the electronic display must automatically and correctly respond to the HDR metadata in the test loop. The measurement shall be the average power consumed over 10 consecutive minutes;
- (d) measurements shall be made after the electronic display has been in the off-mode or, if an off-mode is not available, in standby mode for a minimum of 1 hour immediately followed by a minimum of 1 hour in the on mode and shall be completed before a maximum of 3 hours in on-mode. The relevant video signal shall be displayed during the entire on mode duration. For electronic displays that are known to stabilise within 1 hour, these durations may be reduced if the resulting measurement can be shown to be within 2 % of the results that would otherwise be achieved using the durations described here;
- (e) where ABC is available, measurements shall be made with it switched off. If ABC cannot be switched off, then the measurements shall be performed in an ambient light condition of 100 lux measured at the ABC sensor.

# 2. MEASUREMENTS OF PEAK WHITE LUMINANCE

Measurements of the peak white luminance shall be made:

- (a) with a luminance meter, detecting that portion of the screen exhibiting a full (100 %) white image, which is part of a 'full screen test' pattern not exceeding the average picture level (APL) point where any power limiting or other irregularity occurs;
- (b) without disturbing the luminance meter's detection point on the electronic display whilst switching between the normal configuration and the brightest on mode configuration.

# ANNEX V

# Product information sheet

Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 4.

The product manual or other literature provided with the product shall clearly indicate the link to the model in the product database as a human-readable Uniform Resource Locator (URL) or as QR-code or provide the product registration number.

# Table 4

# Information, order and format of the product information sheet

|    | Information                                                 | Value and precision        | Unit | Notes                                                                                                                                                                                                        |
|----|-------------------------------------------------------------|----------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Supplier's name or trade mark                               | TEXT                       |      |                                                                                                                                                                                                              |
| 2. | Supplier's model identifier                                 | TEXT                       |      |                                                                                                                                                                                                              |
| 3. | Energy efficiency class for standard<br>Dynamic Range (SDR) | [A/B/C/D/E/F/G]            |      | If the product database automati-<br>cally generates the definitive con-<br>tent of this cell, the supplier shall<br>not enter this data.                                                                    |
| 4. | On mode power demand for Standard<br>Dynamic Range (SDR)    | X,X                        | W    | Rounded to the first decimal place<br>for power values below 100 W,<br>and rounded to the first integer for<br>power values from 100 W.                                                                      |
| 5. | Energy efficiency class (HDR)                               | [A/B/C/D/E/F/G] or<br>n.a. |      | If the product database automati-<br>cally generates the definitive con-<br>tent of this cell, the supplier shall<br>not enter this data. Value set to<br>'n.a.' (not applicable) if HDR not<br>implemented. |
| 6. | On mode power demand in High<br>Dynamic Range (HDR) mode    | X,X                        | W    | Rounded to the first decimal place<br>for power values below 100 W,<br>and rounded to the first integer for<br>power values from 100 W (value<br>set to 0 (zero) if 'not applicable').                       |
| 7. | Off mode, power demand                                      | X,X                        | W    |                                                                                                                                                                                                              |
| 8. | Standby mode power demand                                   | X,X                        | W    |                                                                                                                                                                                                              |

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|     | Information                                                                    | Value and precision                    |       | Unit | Notes                                                                                       |                                                                                                             |
|-----|--------------------------------------------------------------------------------|----------------------------------------|-------|------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| 9.  | Networked standby mode power demand                                            | X,X                                    |       | W    |                                                                                             |                                                                                                             |
| 10. | Electronic display category                                                    | [television/monitor/<br>signage/other] |       |      | Select one.                                                                                 |                                                                                                             |
| 11. | Size ratio                                                                     | Х                                      | X : Y |      | integer                                                                                     | E.g. 16:9, 21:9, etc.                                                                                       |
| 12. | Screen resolution (pixels)                                                     | Х                                      | x     | Y    | pixels                                                                                      | Horizontal and vertical pixels                                                                              |
| 13. | Screen diagonal                                                                | X,X                                    |       |      | cm                                                                                          | In cm according to the Interna-<br>tional System of Units (SI),<br>rounded to the nearest decimal<br>place. |
| 14. | Screen diagonal                                                                | X                                      |       |      | inches                                                                                      | Optional, in inches rounded to the nearest integer place.                                                   |
| 15. | Visible screen area                                                            |                                        | X,X   |      | cm <sup>2</sup>                                                                             | Rounded to the one decimal place                                                                            |
| 16. | Panel technology used                                                          | TEXT                                   |       |      | E.g. LCD/LED LCD/QLED LCD/<br>OLED/MicroLED/QDLED/SED/FED/<br>EPD, etc.                     |                                                                                                             |
| 17. | Automatic Brightness Control (ABC)<br>available                                | [YES/NO]                               |       |      | Must be activated as default (if YES).                                                      |                                                                                                             |
| 18. | Voice recognition sensor available                                             | [YES/NO]                               |       |      |                                                                                             |                                                                                                             |
| 19. | Room presence sensor available                                                 | [YES/NO]                               |       |      | Must be activated as default (if YES).                                                      |                                                                                                             |
| 20. | Image refresh frequency rate                                                   | X                                      |       | Hz   |                                                                                             |                                                                                                             |
| 21. | Minimum guaranteed availability of soft-<br>ware and firmware updates (until): | GG MM AAAA                             |       | date | As from Annex II E, point 1 of<br>Commission Regulation (EU)<br>2019/2021 ( <sup>1</sup> ). |                                                                                                             |
| 22. | Minimum guaranteed availability of spare parts (until):                        | GG MM AAAA                             |       | AA   | date                                                                                        | As from Annex II D, point 5 of<br>Regulation (EU) 2019/2021.                                                |
| 23. | Minimum guaranteed product support<br>(until):                                 | GG MM AAAA                             |       |      | date                                                                                        |                                                                                                             |

<sup>(&</sup>lt;sup>1</sup>) Commission Regulation (EU) 2019/2021 of 1 October 2019 laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009 (See page 241 of this Official Journal).

|     | Information                                                                               |                                 | Value and precision                            | Unit | Notes                                                                           |
|-----|-------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------|------|---------------------------------------------------------------------------------|
| 24. | Power supply type:                                                                        |                                 | Internal/External/<br>Standardised<br>external |      | Select one.                                                                     |
| i   | External standardised<br>power supply (included<br>in the product box)                    | Standard name                   | TEXT                                           |      |                                                                                 |
|     |                                                                                           | Input voltage                   | Х                                              | V    |                                                                                 |
|     |                                                                                           | Output voltage                  | Х                                              | V    |                                                                                 |
| ü   | External standardised<br>suitable power supply (if<br>not included in the<br>product box) | Standard name                   | TEXT                                           |      | Mandatory only if EPS not<br>included in the box, non-manda-<br>tory otherwise. |
|     |                                                                                           | Required output<br>voltage      | X,X                                            | V    | Mandatory only if EPS not<br>included in the box, non-manda-<br>tory otherwise. |
|     |                                                                                           | Required deliv-<br>ered current | X,X                                            | А    | Mandatory only if EPS not<br>included in the box, non-manda-<br>tory otherwise. |
|     |                                                                                           | Required cur-<br>rent frequency | Х                                              | Hz   | Mandatory only if EPS not<br>included in the box, non-manda-<br>tory otherwise. |

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# ANNEX VI

# **Technical documentation**

The technical documentation referred to in point 1(d) of Article 3 shall include:

- (1) identification data (general description of the model):
  - (a) trademark and model identifier;
  - (b) supplier's name, address, registered trade name;
- (2) references to the harmonised standards applied, other measurement standards and specifications used in measuring the technical parameters and calculations performed;
- (3) specific precautions to be taken when the model is assembled, installed and tested;
- (4) a list of all equivalent models, including model identifiers;
- (5) measured technical parameters of the model and calculations performed with the measured parameters as listed in Table 5;

# Table 5

# Measured technical parameters

|    |                                                                                                                                                                                                                                                       | Value and precision | Unit              | Notes                                                          |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|----------------------------------------------------------------|
|    | General                                                                                                                                                                                                                                               |                     |                   |                                                                |
| 1. | Ambient temperature                                                                                                                                                                                                                                   | XX,XX               | °C                |                                                                |
| 2. | Test voltage                                                                                                                                                                                                                                          | X                   | V                 |                                                                |
| 3. | Frequency                                                                                                                                                                                                                                             | X,X                 | Hz                |                                                                |
| 4. | Total harmonic distortion (THD) of the electricity supply system                                                                                                                                                                                      | Х                   | %                 |                                                                |
|    | For On-mode                                                                                                                                                                                                                                           |                     |                   |                                                                |
| 5. | Peak white luminance of the brightest on mode configuration                                                                                                                                                                                           | Х                   | cd/m <sup>2</sup> |                                                                |
| 6. | Peak white luminance of the normal configuration                                                                                                                                                                                                      | Х                   | cd/m <sup>2</sup> |                                                                |
| 7. | Peak white luminance ratio (calculated)                                                                                                                                                                                                               | X,X                 | %                 | Value row 6 above divided<br>by value row 5 above<br>times 100 |
|    | For APD                                                                                                                                                                                                                                               |                     |                   |                                                                |
| 8. | Duration of the on mode condition, before the elec-<br>tronic display reaches automatically standby, or off<br>mode, or another condition which does not exceed the<br>applicable power consumption requirements for off<br>mode and/or standby mode. | mm:ss               |                   |                                                                |

|     |                                                                                                                                                                                                                                                                                                                                                  | Value and precision | Unit              | Notes                                                                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------|------------------------------------------------------------------------|
|     | For televisions: the measured value of the time before<br>the television automatically reaches standby, or off-<br>mode, or another condition which does not exceed the<br>applicable power consumption requirements for off-<br>mode and/or standby-mode following the last user<br>interaction;                                                | mm:ss               |                   |                                                                        |
|     | For televisions equipped with room presence sensor: the<br>measured value of the time before the television auto-<br>matically reaches standby, or off-mode, or another con-<br>dition which does not exceed the applicable power con-<br>sumption requirements for off mode and/or standby<br>mode when no presence is detected;                | mm:ss               |                   |                                                                        |
|     | Other electronic displays than televisions and broadcast<br>displays: The measured value of the time before the<br>electronic display automatically reaches standby, or off-<br>mode, or another condition which does not exceed the<br>applicable power consumption requirements for off<br>mode and/or standby mode when no input is detected; | mm:ss               |                   |                                                                        |
|     | For ABC                                                                                                                                                                                                                                                                                                                                          |                     |                   | If available and activated by<br>default (as from Annex V,<br>Table 4) |
| 9.  | Average on mode power demand of the electronic dis-<br>play at an ambient light intensity, measured at the ABC<br>sensor of the electronic display, of 100 lux and 12 lux.                                                                                                                                                                       | X,X                 | W                 |                                                                        |
| 10. | Percentage of power reduction due to ABC action<br>between the 100 lux and 12 lux ambient light<br>conditions.                                                                                                                                                                                                                                   | X,X                 | %                 |                                                                        |
| 11. | Display peak white luminance at each of the following<br>ambient light intensities measured at the ABC sensor of<br>the electronic display, 100 lux, 60 lux, 35 lux, 12 lux.                                                                                                                                                                     | х                   | cd/m²             |                                                                        |
|     | Measured on mode power at 100 lux ambient light at the ABC sensor                                                                                                                                                                                                                                                                                | X,X                 | W                 |                                                                        |
|     | Measured on mode power at 12 lux ambient light at the ABC sensor                                                                                                                                                                                                                                                                                 | X,X                 | W                 |                                                                        |
|     | The measured screen luminance at 60 lux ambient light at the ABC sensor                                                                                                                                                                                                                                                                          | X                   | cd/m <sup>2</sup> |                                                                        |

|                                                                         | Value and precision | Unit              | Notes |
|-------------------------------------------------------------------------|---------------------|-------------------|-------|
| The measured screen luminance at 35 lux ambient at the ABC sensor       | Х                   | cd/m <sup>2</sup> |       |
| The measured screen luminance at 12 lux ambient light at the ABC sensor | Х                   | cd/m <sup>2</sup> |       |

- (6) Additional information requirements:
  - (a) input terminal for the audio and video test signals used for testing;
  - (b) information and documentation on the instrumentation, set-up and circuits used for electrical testing;
  - (c) any other testing condition not described or determined in point (b);
  - (d) for on mode:
    - (i) the characteristics of the dynamic broadcast-content video signal representing typical broadcast TV content; for the HDR dynamic broadcast content video signal the electronic display must be automatically switched to HDR mode by the HDR metadata of that signal;
    - (ii) the sequence of steps for achieving a stable condition with respect to power demand level; and
    - (iii) the picture settings used for the brightest peak white luminance measurement and the test pattern for the video signal used for the measurement.
  - (e) For standby and off mode:
    - (i) the measurement method used;
    - (ii) description of how the mode was selected or programmed including any enhanced reactivation functions; and
    - (iii) sequence of events to reach the condition where the electronic display automatically changes mode.
  - (f) For electronic displays with a designated computer signal interface:
    - (i) confirmation that the electronic display prioritises the computer display power management protocols set out in point 6.2.3 of Annex II of Commission Regulation (EU) No 617/2013 (<sup>1</sup>). Any deviation from the protocols should be reported;
  - (g) For the networked electronic displays only:
    - (i) number and type of network interfaces and, except for wireless network interfaces, their position in the electronic display;

<sup>(&</sup>lt;sup>1</sup>) Commission Regulation (EU) No 617/2013 of 26 June 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers (OJ L 175, 27.6.2013, p. 13).

- (ii) whether the electronic display qualifies as electronic display with HiNA functionality; if no information is provided the electronic display is considered not to be HiNA display or display with HiNA functionality; and
- (iii) information whether networked electronic display provides functionality allowing the power management function and/or the end-user to switch the electronic display being in a condition providing networked standby into standby mode, or off mode or another condition which does not exceed the applicable power demand requirements for off mode and/or standby mode including enhanced reactivation function power allowance where applicable.
- (h) For each type of network port:
  - (i) the default time (mm:ss) after which the power management function, switches the display into a condition providing networked standby; and
  - (ii) the trigger to be used to reactivate the electronic display.
- (7) where the information included in the technical documentation file for a particular electronic display model has been obtained:
  - (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer or
  - (b) by calculation on the basis of design or by extrapolation from another model of the same or of a different supplier, or both;

the technical documentation shall include, as appropriate, the details of such calculation, the assessment undertaken by suppliers to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different suppliers; and

(8) the contact details of the person empowered to bind the supplier, if not included in the technical information uploaded into the database, shall be made available, on request, to market surveillance authorities or to the Commission for carrying out their tasks under this Regulation.

#### ANNEX VII

# Information to be provided in visual advertisements, in technical promotional material in distance selling and in telemarketing, except distance selling on the internet

- 1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in point 1(e) of Article 3 and point (d) of Article 4, the energy efficiency class and the range of efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 2. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in point 1(f) of Article 3 and point (e) Article 4 the energy class and the range of efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 3. Any paper-based distance selling must show the energy class and the range of efficiency classes available on the label as set out in point 4 of this Annex.
- 4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:
  - (a) an arrow, containing the letter of the energy efficiency class in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
  - (b) the colour of the arrow matching the colour of the energy efficiency class;
  - (c) the range of available energy efficiency classes in 100 % black; and,
  - (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

Figure 1

# Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



- 5. Telemarketing-based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the label and the product information sheet through the product database website, or by requesting a printed copy.
- 6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

#### ANNEX VIII

# Information to be provided in the case of distance selling through the internet

- 1. The appropriate label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 2(a) of Annex III. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If a nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
- 2. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall:
  - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
  - (b) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;
  - (c) have the range of available energy efficiency classes in 100 % black; and,
  - (d) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

#### Figure 2

# Coloured left/right arrow, with range of energy efficiency classes indicated



- 3. In the case of nested display, the sequence of display of the label shall be as follows:
  - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
  - (b) the image shall link to the label set out in Annex III;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism; and
  - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
- 4. The appropriate product information sheet made available by suppliers in accordance with point 1(h) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

#### ANNEX IX

#### Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

Where a model has been designed to be able to detect it is being tested (e.g. by recognizing the test conditions or test cycle) and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of the Member States shall apply the following procedure:

- (1) The Member State authorities shall verify one single unit of the model.
- (2) The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 3 of Article 3 of Regulation (EU) 2017/1369 (declared values) and, where applicable, the values used to calculate these values are not more favourable for the supplier than the corresponding values given in the test reports;
  - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values and the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and
  - (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 6.
- (3) If the results referred to in points 2(a) or (b) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be one or more equivalent models.
- (5) The model shall be considered to comply with the applicable requirements if for these three units, the arithmetical mean of the determined values complies with the respective tolerances given in Table 6.
- (6) If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (7) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 and 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex IV.

The Member State authorities shall only apply the verification tolerances that are set out in Table 6 and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method shall be applied.

# Table 6

# Verification Tolerances

| Parameter                                                                           | Verification tolerances                                                                                                                                                                            |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On mode power demand ( <i>P<sub>measured</sub></i> , Watts)                         | The determined value (*) shall not exceed the declared value by more than 7 %.                                                                                                                     |
| Off mode, standby, and networked standby mode power demand in Watts, as applicable. | The determined value (*) shall not exceed the declared value by more than 0,10 Watt if the declared value is 1,00 Watt or less, or by more than 10 % if the declared value is more than 1,00 Watt. |
| Visible screen diagonal in centimetres (and inches if declared)                     | The determined value (*) shall not be lower than the declared value by more than 1 cm or 0,4 inches.                                                                                               |
| Visible screen area in dm <sup>2</sup>                                              | The determined value (*) shall not be lower than the declared value by more than 0,1 dm <sup>2</sup> .                                                                                             |
| The screen resolution in horizontal and verti-<br>cal pixels                        | The determined value (*) shall not deviate from the declared value.                                                                                                                                |

(\*) In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetic mean of the values determined for these three additional units.

# COMMISSION DELEGATED REGULATION (EU) 2019/2014

#### of 11 March 2019

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of household washing machines and household washer-dryers and repealing Commission Delegated Regulation (EU) No 1061/2010 and Commission Directive 96/60/EC

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (<sup>1</sup>), and in particular Article 11(5) and Article 16 thereof,

Whereas:

- Regulation (EU) 2017/1369 empowers the Commission to adopt delegated acts as regards the labelling or rescaling of the labelling of product groups representing significant potential for energy savings and, where relevant, other resources.
- (2) Provisions on the energy labelling of household washing machines were established by Commission Delegated Regulation (EU) No 1061/2010 (<sup>2</sup>).
- (3) Provisions on the energy labelling of household washer-dryers were established by Commission Directive 96/60/EC (<sup>3</sup>).
- (4) The Communication from the Commission COM(2016)773 final (<sup>4</sup>) (ecodesign working plan) established by the Commission in application of Article 16(1) of Directive 2009/125/EC (<sup>5</sup>) of the European parliament and of the Council sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Commission Regulation (EU) No 1015/2010 (<sup>6</sup>), Delegated Regulation (EU) No 1061/2010 and Directive 96/60/EC.
- (5) Measures from the ecodesign working plan have an estimated potential to deliver a total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Household washing machines and household washer-dryers are among the product groups listed in the working plan, with estimated annual electricity savings of 2,5 TWh, leading to GHG emission reductions of 0,8  $MtCO_2$  eq/year, and estimated water savings of 711 million m<sup>3</sup> in 2030.
- (6) Household washing machines and household washer-dryers are among the product groups mentioned in Article 11(5)(b) of Regulation (EU) 2017/1369 for which the Commission should adopt a delegated act to introduce an A to G rescaled label.
- (7) The Commission has reviewed Delegated Regulation (EU) No 1061/2010, as required by its Article 7, and Directive 96/60/EC and analysed technical, environmental and economic aspects of as well as real-life user behaviour. The review was undertaken in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 14 of Regulation (EU) 2017/1369.

<sup>(&</sup>lt;sup>1</sup>) OJ L 198, 28.7.2017, p. 1.

<sup>(2)</sup> Commission Delegated Regulation (EU) No 1061/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household washing machines (OJ L 314, 30.11.2010, p. 47).

<sup>(3)</sup> Commission Directive 96/60/EC of 19 September 1996 implementing Council Directive 92/75/EEC with regard to energy labelling of household combined washer-driers (OJ L 266, 18.10.1996, p. 1).

<sup>(4)</sup> Communication from the Commission Ecodesign working plan 2016-2019 (COM(2016)773 final, 30.11.2016).

<sup>(&</sup>lt;sup>5</sup>) Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10).

<sup>(&</sup>lt;sup>6</sup>) Commission Regulation (EU) No 1015/2010 of 10 November 2010 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household washing machines (OJ L 293, 11.11.2010, p. 21).

(8) The review concluded that there was a need for the introduction of revised energy labelling requirements for household washing machines and household washer-dryers, and that both could be established by the same energy labelling Regulation. The scope of this Regulation should thus comprise household washing machines and household washer-dryers.

(9) Non-household washing machines and non-household washer-dryers have distinct characteristics and uses. They are subject to other regulatory work, in particular Directive 2006/42/EC of the European Parliament and of the Council (<sup>7</sup>), and should not be included in the scope of this Regulation. This Regulation for household washing machines and household washer-dryers should apply to washing machines and washer-dryers with the same technical characteristics, regardless of the setting they are used in.

- (10) The environmental aspects of household washing machines and household washer-dryers, identified as significant for the purposes of this Regulation, are energy and water consumption in the use phase, the generation of waste at the end of life, the emissions to air and water in the production phase (due to the extraction and processing of raw materials) and in the use phase (because of the consumption of electricity).
- (11) It appears from the review that the electricity and water consumption of products subject to this Regulation can be further reduced by implementing energy label measures focusing on better differentiating between products to ensure incentives to suppliers to further improve the energy and resource efficiency of household washing machines and household washer-dryers, and by responding better to the expectations of consumers when using washing or complete washing and drying programmes, as regards their duration in particular.
- (12) The energy labelling of household washing machines and household washer-dryers enable consumers to make informed choices towards more energy and resource efficient appliances. The understanding and relevance of the information provided on the label have been confirmed through a specific consumer survey in line with Article 14(2) of Regulation (EU) 2017/1369.
- (13) Household washing machines and household washer-dryers that are displayed at trade fairs should bear the energy label if the first unit of the model has already been placed on the market or is placed on the market on the trade fair.
- (14) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>8</sup>).
- (15) Recognising the growth of sales of energy-related products through web-stores and internet sales platforms, rather than directly from suppliers, it should be clarified that hosting service providers of web-stores and internet sales platforms should be responsible for displaying the label provided by the supplier in proximity to the price. They should inform the supplier of that obligation, but should not be responsible for the accuracy or content of the label and the product information sheet provided. However, in application of Article 14(1)(b) of Directive 2000/31/EC of the European Parliament and of the Council (°) on electronic commerce, such internet hosting platforms should act expeditiously to remove or to disable access to information about the product information sheet) for example if informed by the market surveillance authority. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.
- (16) The measures provided for in this Regulation were discussed by the Consultation Forum and with the Member States experts in accordance with Article 17 of Regulation (EU) 2017/1369.
- (17) Delegated Regulation (EU) No 1061/2010 and Directive 96/60/EC should be repealed,

<sup>(7)</sup> Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery (OJ L 157, 9.6.2006, p. 24).

<sup>(\*)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(&</sup>lt;sup>9</sup>) Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (OJ L 178, 17.7.2000, p. 1).

HAS ADOPTED THIS REGULATION:

# Article 1

#### Subject matter and scope

1. This Regulation establishes requirements for the labelling of, and the provision of supplementary product information on, electric mains-operated household washing machines and electric mains-operated household washer-dryers including those which can also be powered by batteries, and including built-in household washing machines and built-in household washer-dryers.

- 2. This Regulation shall not apply to
- (a) washing machines and washer-dryers in the scope of Directive 2006/42/EC;
- (b) battery-operated household washing machines and battery-operated household washer-dryers that can be connected to the mains through an AC/DC converter purchased separately;
- (c) household washing machines with a rated capacity lower than 2 kg and household washer-dryers with a rated washing capacity lower than or equal to 2 kg.

# Article 2

# Definitions

For the purposes of this Regulation, the following definitions shall apply:

- (1) 'mains' or 'electric mains' means the electricity supply from the grid of 230 (±10%) volts of alternating current at 50 Hz;
- (2) 'automatic washing machine' means a washing machine where the load is fully treated by the washing machine without the need for user intervention at any point during the programme;
- (3) 'household washing machine' means an automatic washing machine which cleans and rinses household laundry by using water, chemical, mechanical and thermal means, which also has a spin extraction function, and which is declared by the manufacturer in the Declaration of Conformity as complying with Directive 2014/35/EU of the European Parliament and of the Council (<sup>10</sup>) or with Directive 2014/53/EU of the European Parliament and of the Council (<sup>11</sup>);
- (4) 'household washer-dryer' means a household washing machine which, in addition to the functions of an automatic washing machine, in the same drum includes a means for drying the textiles by heating and tumbling, and which is declared by the manufacturer in the Declaration of Conformity as complying with Directive 2014/35/EU or with Directive 2014/53/EU;
- (5) 'built-in household washing machine' means a household washing machine that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top and/or bottom, and sides) by panels;
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;
- (6) 'built-in household washer-dryer' means a household washer-dryer that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top and/or bottom, and sides) by panels;

<sup>(10)</sup> Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (OJ L 96, 29.3.2014, p. 357).

<sup>(&</sup>lt;sup>11</sup>) Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (OJ L 153, 22.5.2014, p. 62).

- (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
- (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;
- (7) 'multi-drum household washing machine' means a household washing machine equipped with more than one drum, whether in separate units or in the same casing;
- (8) 'multi-drum household washer-dryer' means a household washer-dryer equipped with more than one drum, whether in separate units or in the same casing;
- (9) 'point of sale' means a location where household washing machines or household washer-dryers, or both, are displayed or offered for sale, hire or hire-purchase.

For the purposes of the annexes, additional definitions are set out in Annex I.

### Article 3

# **Obligations of suppliers**

- 1. Suppliers shall ensure that:
- (a) each household washing machine and household washer-dryer is supplied with a printed label in the format as set out in Annex III and, for a multi-drum household washing machine or a multi-drum household washer-dryer, in accordance with Annex X;
- (b) the parameters of the product information sheet, as set out in Annex V, are entered into the product database;
- (c) if specifically requested by the dealer of household washing machines and household washer-dryers, the product information sheet shall be made available in printed form;
- (d) the content of the technical documentation, set out in Annex VI, is entered into the product database;
- (e) any visual advertisement for a specific model of household washing machine or household washer-dryer contains the energy efficiency class and the range of energy efficiency classes available on the label in accordance with Annex VII and Annex VIII;
- (f) any technical promotional material concerning a specific model of household washing machine or household washer-dryer, including on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (g) an electronic label in the format and containing the information as set out in Annex III is made available to dealers for each model of household washing machine and of household washer-dryer;
- (h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each model of household washing machine and of household washer-dryer.

2. The energy efficiency class and the acoustic airborne noise emission class are defined in Annex II and shall be calculated in accordance with Annex IV.

#### Article 4

# **Obligations of dealers**

Dealers shall ensure that:

(a) each household washing machine or household washer-dryer, at the point of sale, including at trade fairs, bears the label provided by suppliers in accordance with point 1(a) of Article 3, with the label being displayed for built-in appliances in such a way as to be clearly visible, and for all other appliances in such a way as to be clearly visible on the outside on the front or top of the household washing machine or household washer-dryer;

- (b) in the case of distance selling and sale through the internet, the label and product information sheet are provided in accordance with Annexes VII and VIII;
- (c) any visual advertisement for a specific model of household washing machine or household washer-dryer contains the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (d) any technical promotional material concerning a specific model of household washing machine or household washer-dryer, including on the internet, which describes its specific technical parameters, includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII.

# Article 5

# **Obligations of internet hosting platforms**

Where a hosting service provider as referred to in Article 14 of Directive 2000/31/EC allows the direct selling of household washing machines or household washer-dryers through its internet website, the service provider shall enable the showing of the electronic label and electronic product information sheet provided by the dealer on the display mechanism in accordance with the provisions of Annex VIII and shall inform the dealer of the obligation to display them.

#### Article 6

# Measurement methods

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation methods set out in Annex IV.

# Article 7

#### Verification procedure for market surveillance purposes

Member States shall apply the procedure laid down in Annex IX when performing the market surveillance checks referred to in paragraph 3 of Article 8 of Regulation (EU) 2017/1369.

# Article 8

#### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this review including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2025.

The review shall in particular assess the following:

- (a) the improvement potential with regard to the energy consumption, functional and environmental performance of household washing machines and household washer-dryers;
- (b) the appropriateness of maintaining two scales for the energy performance of household washer-dryers;
- (c) the effectiveness of existing measures in achieving changes of end-user behaviour in purchasing more energy and resource efficient appliances and using more energy and resource efficient programmes;
- (d) the possibility to address circular economy objectives.

# Article 9

# Repeal

Regulation (EU) No 1061/2010 is repealed as of 1 March 2021.

Directive 96/60/EC is repealed as of 1 March 2021.

# Article 10

# **Transitional measures**

As from 25 December 2019 until 28 February 2021, the product fiche required under point (b) of Article 3 of Regulation (EU) No 1061/2010 may be made available on the product database established by Article 12 of Regulation (EU) 2017/1369 instead of being provided in printed form. In this case the supplier shall ensure that if specifically requested by the dealer, the product fiche shall be made available in printed form.

As from 25 December 2019 until 28 February 2021, the fiche required under paragraph 3 of Article 2 of Directive 96/60/EC may be made available on the product database established by Article 12 of Regulation (EU) 2017/1369 instead of being provided in printed form. In this case the supplier shall ensure that if specifically requested by the dealer, the fiche shall be made available in printed form.

#### Article 11

#### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 10 shall apply from 25 December 2019 and points 1(a) and 1(b) of Article 3 shall apply from 1 November 2020.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 11 March 2019.

For the Commission The President Jean-Claude JUNCKER
### ANNEX I

### Definitions applicable for the annexes

The following definitions shall apply:

- (1) 'Energy Efficiency Index' (EEI) means the ratio of the weighted energy consumption to the standard cycle energy consumption;
- (2) 'programme' means a series of operations that are pre-defined and which are declared by the supplier as suitable for washing, drying or continuously washing and drying certain types of textile;
- (3) 'washing cycle' means a complete washing process as defined by a selected programme, consisting of a series of different operations including washing, rinsing, and spinning;
- (4) 'drying cycle' means a complete drying process as defined by the required programme, consisting of a series of different operations including heating and tumbling;
- (5) 'complete cycle' means a washing and drying process, consisting of a washing cycle and a drying cycle;
- (6) 'continuous cycle' means a complete cycle without interruption of the process and with no need for user intervention at any point during the programme;
- (7) 'quick response' (QR) code means a matrix barcode included on the energy label of a product model that links to that model's information in the public part of the product database;
- (8) 'rated capacity' means the maximum mass in kilogram stated by the supplier at 0,5 kg intervals of dry textiles of a particular type, which can be treated in one washing cycle of a household washing machine, or in one complete cycle of a household washer-dryer respectively, on the selected programme, when loaded in accordance with the supplier's instructions;
- (9) 'rated washing capacity' means the maximum mass in kilogram stated by the supplier at 0,5 kg intervals of dry textiles of a particular type, which can be treated in one washing cycle of a household washing machine, or in one washing cycle of a household washer-dryer respectively, on the selected programme, when loaded in accordance with the supplier's instructions;
- (10) 'rated drying capacity' means the maximum mass in kilogram stated by the supplier at 0,5 kg intervals of dry textiles of a particular type, which can be treated in one drying cycle of a household washer-dryer on the selected programme, when loaded in accordance with the supplier's instructions;
- (11) 'eco 40-60' means the name of the programme declared by the supplier as able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same washing cycle, and to which the information on the energy label and in the product information sheet relates;
- (12) 'rinsing effectiveness' means the concentration of the residual content of linear alkylbenzene sulfonate (LAS) in the treated textiles after the washing cycle of a household washing machine or household washer-dryer ( $I_R$ ) or the complete cycle of a household washer-dryer ( $J_R$ ), expressed in gram per kilogram of dry textile;
- (13) 'weighted energy consumption ( $E_W$ )' means the weighted average of the energy consumption of the washing cycle of a household washing machine or a household washer-dryer for the eco 40-60 programme at rated washing capacity, and at half and at a quarter of the rated washing capacity, expressed in kilowatt hour per cycle;
- (14) 'weighted energy consumption (E<sub>WD</sub>)' means the weighted average of the energy consumption of the household washer-dryer for the wash and dry cycle at rated capacity and at half of the rated capacity, expressed in kilowatt hour per cycle;

- (15) 'standard cycle energy consumption' (SCE) means the energy consumption taken as a reference, as a function of the rated capacity of a household washing machine or of a household washer-dryer, expressed in kilowatt hour per cycle;
- (16) 'weighted water consumption  $(W_W)$ ' means the weighted average of the water consumption of a the washing cycle of a household washing machine or of a household washer-dryer for the eco 40-60 programme at rated washing capacity, and at half and at a quarter of the rated washing capacity, expressed in litre per cycle;
- (17) 'weighted water consumption ( $W_{WD}$ )' means the weighted average of the water consumption of a household washer-dryer for the wash and dry cycle at rated capacity and at half of the rated capacity, expressed in litre per cycle;
- (18) 'remaining moisture content' means for household washing machines and for the washing cycle of household washer-dryers, the amount of moisture contained in the load at the end of the washing cycle;
- (19) 'final moisture content' means for household washer-dryers the amount of moisture contained in the load at the end of the drying cycle;
- (20) 'cupboard dry' means the status of treated textiles dried in a drying cycle to a final moisture content of 0 %;
- (21) 'programme duration' ( $t_W$ ) means the length of time beginning with the initiation of the programme selected, excluding any user programmed delay, until the end of the programme is indicated and the user has access to the load.
- (22) 'cycle duration' (t<sub>WD</sub>) means, for the complete cycle of a household washer-dryer, the length of time beginning with the initiation of the programme selected for the washing cycle, excluding any user programmed delay, until the end of the drying cycle is indicated and the user has access to the load;
- (23) 'off mode' means a condition in which the household washing machine or the household washer-dryer is connected to the mains and is not providing any function; the following shall also be considered as off mode:
  - (a) a condition providing only an indication of off mode;
  - (b) a condition providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council (<sup>1</sup>);
- (24) 'standby mode' means a condition where the household washing machine or the household washer-dryer is connected to the mains and provides only the following functions, which may persist for an indefinite time:
  - (a) reactivation function or reactivation function and a mere indication of enabled reactivation function, and/or
  - (b) reactivation function through a connection to a network; and/or
  - (c) information or status display, and/or
  - (d) detection function for emergency measures;
- (25) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (26) 'wrinkle guard function' means an operation of the household washing machine or of the household washer-dryer after completion of a programme to prevent excessive wrinkle building in the laundry;
- (27) 'delay start' means a condition where the user has selected a specified delay to the beginning or end of the cycle of the selected programme;

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

- (28) 'guarantee' means any undertaking by the retailer or supplier to the consumer to:
  - (a) reimburse the price paid; or
  - (b) replace, repair or handle the household washing machine and the household washer-dryer in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising;
- (29) 'display mechanism' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- (30) 'nested display' means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (31) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (32) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in nongraphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications.

### ANNEX II

# A. Energy efficiency classes

The energy efficiency class of a household washing machine and of the washing cycle of a household washer-dryer shall be determined on the basis of its Energy Efficiency Index ( $\text{EEI}_W$ ) as set out in Table 1.

The  $EEI_W$  of a household washing machine and of the washing cycle of a household washer-dryer shall be calculated in accordance with Annex IV.

|        |            |         |              |         | Table    | 1          |           |        |             |          |       |
|--------|------------|---------|--------------|---------|----------|------------|-----------|--------|-------------|----------|-------|
| Energy | efficiency | classes | of household | washing | machines | and of the | washing c | ycle o | f household | washer-d | ryers |

| Energy Efficiency Class | Energy Efficiency Index (EEI <sub>w</sub> ) |
|-------------------------|---------------------------------------------|
| А                       | <b>EEI</b> <sub>W</sub> ≤ 52                |
| В                       | 52 < <b>EEI</b> <sub>W</sub> ≤ 60           |
| С                       | 60 < <b>EEI</b> <sub>W</sub> ≤ 69           |
| D                       | $69 \leq \mathbf{EEI}_{\mathbf{W}} \leq 80$ |
| E                       | 80 < <b>EEI</b> <sub>W</sub> ≤ 91           |
| F                       | 91 < <b>EEI</b> <sub><b>w</b></sub> ≤ 102   |
| G                       | <b>EEI</b> <sub>W</sub> > 102               |

The energy efficiency class of the complete cycle of a household washer-dryer shall be determined on the basis of its Energy Efficiency Index ( $\text{EEI}_{WD}$ ) as set out in Table 2.

The EEI<sub>WD</sub> of the complete cycle of a household washer-dryer shall be calculated in accordance with Annex IV.

Table 2

# Energy efficiency classes of the complete cycle of a household washer-dryer

| Energy Efficiency Class | Energy Efficiency Index (EEI <sub>WD</sub> ) |
|-------------------------|----------------------------------------------|
| А                       | <b>EEI<sub>WD</sub>≤ 37</b>                  |
| В                       | $37 < \mathbf{EEI}_{\mathbf{WD}} \le 45$     |
| С                       | 45 < EEI <sub>wD</sub> ≤ 55                  |
| D                       | 55 < <b>EEI<sub>WD</sub></b> ≤ 67            |
| Е                       | 67 < <b>EEI<sub>WD</sub></b> ≤ 82            |
| F                       | 82 < <b>EEI<sub>WD</sub></b> ≤ 100           |
| G                       | <b>EEI<sub>WD</sub> &gt; 100</b>             |

# B. Spin-drying efficiency classes

The spin-drying efficiency class of a household washing machine and of the washing cycle of a household washer-dryer shall be determined on the basis of the remaining moisture content (D) as set out in Table 3.

The D of a household washing machine and of the washing cycle of a household washer-dryer shall be calculated in accordance with Annex IV.

# Table 3

# Spin-drying efficiency classes

| Spin-drying efficiency class | Remaining moisture content (D) (%) |
|------------------------------|------------------------------------|
| А                            | D < 45                             |
| В                            | 45 ≤ D < 54                        |
| С                            | 54 ≤ D < 63                        |
| D                            | 63 ≤ D < 72                        |
| E                            | 72 ≤ D < 81                        |
| F                            | 81 ≤ D < 90                        |
| G                            | D ≥ 90                             |

# C. Acoustic airborne noise emission classes

The acoustic airborne noise emission class of a household washing machine and of a washing cycle of a household washer-dryer shall be determined on the basis of the acoustic airborne noise emissions as set out in Table 4.

# Table 4

# Acoustic airborne noise emission classes

| Phase    | Acoustic airborne noise emission class | Noise (dB)  |  |
|----------|----------------------------------------|-------------|--|
| Spinning | А                                      | n < 73      |  |
|          | В                                      | 73 ≤ n < 77 |  |
|          | С                                      | 77 ≤ n < 81 |  |
|          | D                                      | n ≥ 81      |  |



### A. Label for household washing machines

- 1. LABEL FOR HOUSEHOLD WASHING MACHINES
- 1.1. Label



- 1.2. The following information shall be included in the label:
  - I. QR code;
  - II. supplier's name or trade mark;
  - III. supplier's model identifier;
  - IV. scale of energy efficiency classes from A to G;
  - V. the energy efficiency class determined in accordance with Annex II;
  - VI. weighted energy consumption per 100 cycles in kWh, rounded to the nearest integer in accordance with Annex IV;
  - VII. rated capacity, in kg, for the eco 40-60 programme;
  - VIII. weighted water consumption per cycle in litres, rounded to the nearest integer in accordance with Annex IV:
  - IX. duration of the eco 40-60 programme at rated capacity in h:min rounded to the nearest minute;
  - X. Spin-drying efficiency class, determined in accordance with point B of Annex II;

- XI. airborne acoustic noise emissions of the spinning phase, expressed in dB(A) re 1 pW and rounded to the nearest integer, and airborne acoustic noise emission class, determined in accordance with point C of Annex II;
- XII. the number of this Regulation, that is '2019/2014'.
- 2. LABEL DESIGN FOR HOUSEHOLD WASHING MACHINES

The design of the label shall be as in the figure below.



Whereby:

- (a) The label shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.
- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.

- (d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label design for household washing machines.
- (e) Colours shall be CMYK cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.
- (f) The label shall fulfil all the following requirements (numbers refer to the figure above):
  - the colours of the EU logo shall be as follows:
    - the background: 100,80,0,0;
    - the stars: 0,0,100,0;
  - 2 the colour of the energy logo shall be: 100,80,0,0;
  - **3** the QR code shall be 100 % black;
  - 4 the supplier's name shall be 100 % black and in Verdana Bold, 9 pt;
  - 5 the model identifier shall be 100 % black and in Verdana Regular 9 pt;
  - the A to G scale shall be as follows:
    - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrows;
    - the colours of the A to G scale arrows shall be as follows:
      - A-class: 100,0,100,0;
      - B-class: 70,0,100,0;
      - C-class: 30,0,100,0;
      - D-class: 0,0,100,0;
      - E-class: 0,30,100,0;
      - F-class: 0,70,100,0;
      - G-class: 0,100,100,0;
  - the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
  - the letter of the energy efficiency class shall be 100 % white and in Calibri Bold 33 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;
  - the value of the weighted energy consumption per 100 cycles shall be in Verdana Bold font 28 pt; 'kWh' shall be in Verdana Regular font, 18 pt; the number '100' in the icon representing 100 cycles shall be in Verdana Regular 14 pt. The value and unit shall be centred and 100 % black;
    - the pictograms shall be as shown as in the label design and as follows:
      - the pictograms' lines shall have a weight of 1,2 pt and they and the texts (numbers and units) shall be 100 % black;
      - the texts under the 3 top pictograms shall be in Verdana Bold 16 pt with the units in Verdana Regular 12 pt, they shall be centred under the pictograms;
      - <u>the spin-drying energy efficiency pictogram</u>: the range of spin-drying energy efficiency classes (A to G) shall be centred under the pictogram, with the letter of the applicable spin-drying energy efficiency class in Verdana Bold 16 pt and the other letters of the spin-drying energy efficiency classes in Verdana Regular 10 pt;

- the airborne acoustical noise emission pictogram: the number of decibels in the loudspeaker shall be in Verdana Bold 12 pt, with the unit 'dB' in Verdana Regular 9 pt; the range of noise classes (A to D) shall be centred under the pictogram, with the letter of the applicable noise class in Verdana Bold 16 pt and the other letters of the noise classes in Verdana Regular 10 pt;
- the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

### B. Label for household washer-dryer

- 1. LABEL FOR HOUSEHOLD WASHER-DRYERS
- 1.1. Label:



- 1.2. The following information shall be included in the label:
  - I. QR code;
  - II. supplier's name or trade mark;
  - III. supplier's model identifier;
  - IV. scales of energy efficiency classes from A to G for the complete cycle (on the left side) and for the washing cycle (on the right side);
  - V. the energy efficiency class for the complete cycle (on the left side) determined in accordance with Annex II; and for the washing cycle (on the right side) determined in accordance with Annex II;
  - VI. weighted energy consumption per 100 cycles in kWh, rounded to the nearest integer in accordance with Annex IV, for the complete cycle (on the left side);
  - VII. weighted energy consumption per 100 cycles in kWh, rounded to the nearest integer in accordance with Annex IV for the washing cycle (on the right side);
  - VIII. rated capacity for the complete cycle (on the left side) and for the washing cycle (on the right side);

- IX. weighted water consumption per cycle in litre, rounded to the nearest integer in accordance with Annex IV for the complete cycle (on the left side) and for the washing cycle (on the right side);
- X. cycle duration at rated capacity for the complete cycle (on the left side) and for the washing cycle (on the right side);
- XI. Spin-drying efficiency class, determined in accordance with point B of Annex II;
- XII. airborne acoustic noise emission class of the spinning phase of the eco 40-60 programme and value in dB(A) re 1 pW and rounded to the nearest integer;
- XIII. the number of this Regulation, that is '2019/2014'.
- 2. LABEL DESIGN FOR HOUSEHOLD WASHER-DRYERS



Whereby:

(a) The label shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.

- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.
- (d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label design for household washer dryers.
- (e) Colours shall be CMYK cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.
- (f) The label shall fulfil all the following requirements (numbers refer to the figure above):
  - the colours of the EU logo shall be as follows:
    - the background: 100,80,0,0;
    - the stars: 0,0,100,0;
  - 2 the colour of the energy logo shall be: 100,80,0,0;
  - 3 the QR code shall be 100 % black;
  - 4 the supplier's name shall be 100 % black and in Verdana Bold, 9 pt;
  - **5** the model identifier shall be 100 % black and in Verdana Regular 9 pt;
  - 6 the A to G scales shall be as follows:
    - the letters of the energy efficiency scales shall be 100% white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4 mm from the left side of the arrows;
    - the colours of the A to G scale arrows shall be as follows:
      - A-class: 100,0,100,0;
      - B-class: 70,0,100,0;
      - C-class: 30,0,100,0;
      - D-class: 0,0,100,0;
      - E-class: 0,30,100,0;
      - F-class: 0,70,100,0;
      - G-class: 0,100,100,0;
  - the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
  - It he letter of the energy efficiency class shall be 100 % white and in Calibri Bold 26 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;
  - Ithe value of the weighted energy consumption per 100 cycles shall be in Verdana Bold 16 pt; 'kWh' shall be in Verdana Regular 10 pt; the number '100' in the pictogram representing 100 cycles shall be in Verdana Regular 6 pt. The text shall be centred and 100 % black;
  - the pictograms shall be as shown as in the label designs and as follows:
    - the pictograms' lines shall have a weight of 1,2 pt and they and the texts (numbers and units) shall be 100 % black;
    - the texts at the right and left of the pictograms shall be in Verdana Bold 14 pt with the unit in Verdana Regular 10 pt;
    - <u>the spin-drying energy efficiency pictogram</u>: the range of spin-drying energy efficiency classes (A to G) shall be centred under the pictogram, with the letter of the applicable spin-drying energy efficiency class in Verdana Bold 16 pt and the other letters of the spin-drying energy efficiency classes in Verdana Regular 10 pt;

— the airborne acoustical noise emission pictogram: the number of decibels in the loudspeaker shall be in Verdana Bold 9 pt, with the unit 'dB' in Verdana Regular 7 pt; the range of noise classes (A to D) shall be centred under the pictogram, with the letter of the applicable noise class in Verdana Bold 16 pt and the other letters of the noise classes in Verdana Regular 10 pt;

the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

#### ANNEX IV

### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which takes into account the generally recognised state-of-the-art, and in line with the following provisions.

The eco 40-60 programme shall be used for the measurement and calculation of the energy consumption, Energy Efficiency Index ( $EEI_W$ ), maximum temperature, water consumption, remaining moisture content, programme duration, washing efficiency, rinsing effectiveness, spin-drying efficiency and airborne acoustical noise emissions in the spinning phase for household washing machines and the washing cycle of household washer-dryers. The energy consumption, maximum temperature, water consumption, remaining moisture content, programme duration, washing effectiveness shall be measured concurrently.

The wash and dry cycle shall be used for the measurement and calculation of the energy consumption, Energy Efficiency Index ( $EEI_{WD}$ ), maximum temperature in the washing phase, water consumption, final moisture content, cycle duration, washing efficiency and rinsing effectiveness for household washer-dryers. The energy consumption, maximum temperature, water consumption, final moisture content, cycle duration, washing efficiency and rinsing effectiveness shall be measured concurrently.

When measuring the parameters of this annex for the eco 40-60 programme and for the wash and dry cycle, the highest spin speed option for the eco 40-60 programme shall be used at rated capacity, at half of the rated capacity and, where relevant, at a quarter of the rated capacity.

For household washing machines with a rated capacity lower than or equal to 3 kg and for household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the parameters for the eco 40-60 programme and for the wash and dry cycle shall be measured at rated capacity only.

The duration of the eco 40-60 programme ( $t_W$ ) at rated washing capacity, at half of the rated washing capacity and at a quarter of the rated washing capacity, and the duration of the wash and dry cycle ( $t_{WD}$ ) at rated capacity and at half of the rated capacity, are expressed in hours and minutes and rounded to the nearest minute.

Airborne acoustical noise emissions are measured in dB(A) with respect to 1 pW and rounded to the nearest integer.

### 1. RATED CAPACITY OF HOUSEHOLD WASHER-DRYERS

The rated capacity of household washer-dryers shall be measured, using the wash and dry cycle.

If the household washer-dryer provides a continuous cycle, the rated capacity of the wash and dry cycle shall be the rated capacity for this cycle.

If the household washer-dryer does not provide a continuous cycle, the rated capacity of the wash and dry cycle shall be the lower value of the rated washing capacity of the eco 40-60 programme and the rated drying capacity of the drying cycle achieving cupboard dry status.

### 2. ENERGY EFFICIENCY INDEX

2.1. Energy Efficiency Index ( $EEI_W$ ) of household washing machines and the washing cycle of household washer-dryers

For the calculation of the  $EEI_W$ , the weighted energy consumption of the eco 40-60 programme at the rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity is compared to its standard energy consumption.

(a) The  $EEI_W$  is calculated as follows, and is rounded to one decimal place:

$$EEI_W = (E_W/SCE_W) \times 100$$

where:

 $E_W$  is the weighted energy consumption of the household washing machine or the washing cycle of the household washer-dryer;

SCE<sub>w</sub> is the standard cycle energy consumption of the household washing machine or the washing cycle of the household washer-dryer.

(b) The  $SCE_W$  is calculated in kWh per cycle and rounded to three decimal places as follows:

$$SCE_W = -0.0025 \times c^2 + 0.0846 \times c + 0.3920$$

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer-dryer for the eco 40-60 programme.

(c) The  $E_W$  is calculated in kWh per cycle as follows and rounded to three decimal places:

$$E_{W} = A \times E_{W,full} + B \times E_{W,\frac{1}{2}} + C \times E_{W,\frac{1}{4}}$$

where:

 $E_{W,full}$  is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at the rated washing capacity and rounded to three decimal places;

 $E_{W,1/2}$  is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at half of the rated washing capacity and rounded to three decimal places;

 $E_{W,1/4}$  is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at a quarter of the rated washing capacity and rounded to three decimal places;

A is the weighting factor for rated washing capacity and rounded to three decimal places;

B is the weighting factor for half of the rated washing capacity and rounded to three decimal places;

C is the weighting factor for a quarter of the rated washing capacity and rounded to three decimal places.

For household washing machines with a rated capacity lower than or equal to 3 kg and for household washerdryers with a rated washing capacity lower than or equal to 3 kg. A shall be equal to 1; B and C shall be equal to 0. For other household washing machines and household washer-dryers, the values of the weighting factors depend on the rated capacity according to the following equations:

$$A = -0,0391 \times c + 0,6918$$
$$B = -0,0109 \times c + 0,3582$$
$$C = 1 - (A + B)$$

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer dryer.

(d) The weighted energy consumption per 100 cycles of the household washing machine or of the washing cycle of the household washer-dryer is calculated as follows and rounded to the nearest integer:

 $E_W \times 100$ 

2.2. Energy Efficiency Index (EEI<sub>WD</sub>) of the complete cycle of household washer-dryers

For the calculation of the  $\text{EEI}_{WD}$  of a household washer-dryer model, the weighted energy consumption of the wash and dry cycle at the rated capacity and half of the rated capacity is compared to its standard cycle energy consumption.

(a) The  $\text{EEI}_{\text{WD}}$  is calculated as follows, and is rounded to one decimal place:

$$EEI_{WD} = (E_{WD}/SCE_{WD}) \times 100$$

where:

 $E_{WD}$  is the weighted energy consumption of the complete cycle of the household washer-dryer;

 $SCE_{WD}$  is the standard cycle energy consumption of the complete cycle of the household washer-dryer.

(b) The  $SCE_{WD}$  is calculated in kWh per cycle and rounded to three decimal places as follows:

$$SCE_{WD} = -0.0502 \times d^2 + 1.1742 \times d - 0.644$$

where d is the rated capacity of the household washer-dryer for the wash and dry cycle.

(c) For household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the  $E_{WD}$  is the energy consumption at rated capacity and rounded to three decimal places.

For other household washer-dryers, the  $E_{WD}$  is calculated in kWh per cycle as follows and rounded to three decimal places:

$$E_{WD} = \frac{\left[3 \times E_{WD, \text{full}} + 2 \times E_{WD, \frac{1}{2}}\right]}{5}$$

where:

 $E_{WD,full}$  is the energy consumption of the household washer-dryer for the wash and dry cycle at rated capacity and rounded to three decimal places;

 $E_{WD,1/2}$  is the energy consumption of the household washer-dryer for the wash and dry cycle at half the rated capacity and rounded to three decimal places.

(d) The weighted energy consumption per 100 cycles of the complete cycle of the washer-dryer is calculated as follows and rounded to the nearest integer:

 $E_{WD} \times 100$ 

### 3. WASHING EFFICIENCY INDEX

The washing efficiency index of household washing machines and of the washing cycle of household washer-dryers  $(I_w)$  and the washing efficiency index of the complete cycle of household washer-dryers  $(J_w)$  shall be calculated using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and rounded to two decimal places.

#### 4. RINSING EFFECTIVENESS

The rinsing effectiveness of household washing machines and of the washing cycle of household washer-dryers ( $I_R$ ) and the rinsing effectiveness of the complete cycle of household washer-dryers ( $J_R$ ) shall be calculated using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible method based on the detection of the linear alkylbenzene sulfonate (LAS) marker, and rounded to one decimal place.

### 5. MAXIMUM TEMPERATURE

The maximum temperature reached for 5 minutes inside the laundry being treated in household washing machines and in the washing cycle of household washer-dryers shall be determined using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible method, and rounded to the nearest integer.

#### 6. WEIGHTED WATER CONSUMPTION

(1) The weighted water consumption  $(W_w)$  of a household washing machine or the washing cycle of a household washer-dryer is calculated in litres and rounded to the nearest integer:

$$W_{W} = (A \times W_{W,full} + B \times W_{W,1/2} + C \times W_{W,1/4})$$

where:

 $W_{W,full}$  is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for the eco 40-60 programme at rated washing capacity, in litres and rounded to one decimal place;

 $W_{W,V_2}$  is the water consumption of the household washing machine or of the washing cycle of a household washerdryer for the eco 40-60 programme at half of the rated washing capacity, in litres and rounded to one decimal place;

 $W_{W,1/4}$  is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for the eco 40-60 programme at a quarter of the rated washing capacity, in litres and rounded to one decimal place;

A, B and C are the weighting factors as described in point 2.1(c).

(2) For household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the weighted water consumption is the water consumption at rated capacity and rounded to the nearest integer.

For other household washer-dryers, the weighted water consumption  $(W_{WD})$  of the wash and dry cycle of a household washer-dryer is calculated as follows and rounded to the nearest integer:

$$W_{WD} = \frac{\left[3 \times E_{WD,full} + 2 \times E_{WD,\frac{1}{2}}\right]}{5}$$

where:

 $W_{WD,full}$  is the water consumption of the wash and dry cycle of a household washer-dryer at rated capacity, in litres and rounded to one decimal place;

 $W_{WD,!2}$  is the water consumption of the wash and dry cycle of a household washer-dryer at half of the rated capacity, in litres and rounded to one decimal place.

### 7. REMAINING MOISTURE CONTENT

The weighted remaining moisture content after washing (D) of a household washing machine and of the washing cycle of a household washer-dryer is calculated in percentage as follows and rounded to the nearest whole percent:

$$D = \left[A \times D_{\text{full}} + B \times D\frac{1}{2} + C \times D\frac{1}{4}\right]$$

where:

 $D_{full}$  is the remaining moisture content for the eco 40-60 programme at rated washing capacity, in percentage and rounded to one decimal place;

 $D_{1/2}$  is the remaining moisture content for the eco 40-60 programme at half of the rated washing capacity in percentage and rounded to one decimal place;

 $D_{1/4}$  is the remaining moisture content for the eco 40-60 programme at a quarter of the rated washing capacity in percentage and rounded to one decimal place;

A, B and C are the weighting factors as described in point 2.1(c).

### 8. FINAL MOISTURE CONTENT

For the drying cycle of a household washer-dryer, cupboard dry status corresponds to 0 % final moisture content, which is the thermodynamic equilibrium of the load with the ambient air conditions of temperature (tested at  $20 \pm 2$  °C) and relative humidity (tested at  $65 \pm 5$  %).

The final moisture content is calculated in accordance with the harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union and rounded to one decimal place.

# 9. LOW POWER MODES

The power consumption of the off mode ( $P_o$ ), standby mode ( $P_{sm}$ ) and where applicable delay start ( $P_{ds}$ ) are measured. The measured values are expressed in W and rounded to two decimal places.

During measurement of the power consumption in low power modes, the following shall be checked and recorded:

- the display or not of information;
- the activation or not of a network connection.

If a household washing machine or a household washer-dryer provides for a wrinkle guard function, this operation shall be interrupted by opening the household washing machine or household washer-dryer door, or any other appropriate intervention 15 minutes before the measurement of energy consumption.

# 10. ACOUSTIC AIRBORNE NOISE EMISSION

The acoustic airborne noise emission of the spinning phase of household washing machines and household washer-dryers shall be calculated for the eco 40-60 programme at rated washing capacity, using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and rounded to the nearest integer.

# ANNEX V

# Product information sheet

# 1. Household washing machines

Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 5.

The user manual or other literature provided with the product shall clearly indicate the link to the model in the product database as a human-readable Uniform Resource Locator (URL) or as QR code or by providing the product registration number.

# Table 5

# Content, order and format of the product information sheet

# Supplier's name or trade mark:

Supplier's address (<sup>b</sup>):

Model identifier:

# General product parameters:

| Parameter                                                                                                                                                    | Va                | lue | Parameter                                                                                                                                                                                    | Value               |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---|
|                                                                                                                                                              | X,X               |     |                                                                                                                                                                                              | Height              | х |
| Rated capacity (ª) (kg)                                                                                                                                      |                   |     | Dimensions in cm                                                                                                                                                                             | Width               | х |
|                                                                                                                                                              |                   |     |                                                                                                                                                                                              | Depth               | x |
| EEI <sub>w</sub> (ª)                                                                                                                                         | X,X               |     | Energy efficiency class (ª)                                                                                                                                                                  | [A/B/C/D/E/F/G] (°) |   |
| Washing efficiency index (ª)                                                                                                                                 | X,XX              |     | Rinsing effectiveness (g/kg) (ª)                                                                                                                                                             | X,X                 |   |
| Energy consumption in kWh per<br>cycle, based on the eco 40-60 pro-<br>gramme. Actual energy consump-<br>tion will depend on how the appli-<br>ance is used. | x,xxx             |     | Water consumption in litre per<br>cycle, based on the eco 40-60<br>programme. Actual water con-<br>sumption will depend on how the<br>appliance is used and on the<br>hardness of the water. | x                   |   |
|                                                                                                                                                              | Rated<br>capacity | x   |                                                                                                                                                                                              | Rated<br>capacity   | x |
| Maximum temperature inside the treated textile ( <sup>a</sup> ) (°C)                                                                                         | Half              | X   | Remaining moisture content (ª) (%)                                                                                                                                                           | Half                | х |
|                                                                                                                                                              | Quarter           | Х   |                                                                                                                                                                                              | Quarter             | x |

|                                                                                       | Rated<br>capacity | x    |                                                                    |                          |  |
|---------------------------------------------------------------------------------------|-------------------|------|--------------------------------------------------------------------|--------------------------|--|
| Spin speed (ª) (rpm)                                                                  | Half              | х    | Spin-drying efficiency class (ª)                                   | [A/B/C/D/E/F/G] (°)      |  |
|                                                                                       | Quarter           | х    |                                                                    |                          |  |
|                                                                                       | Rated<br>capacity | x:xx |                                                                    | [built-in/free-standing] |  |
| Programme duration (ª) (h:min)                                                        | Half              | x:xx | Туре                                                               |                          |  |
|                                                                                       | Quarter           | x:xx |                                                                    |                          |  |
| Airborne acoustical noise emis-<br>sions in the spinning phase (ª)<br>(dB(A) re 1 pW) | x                 |      | Airborne acoustical noise emis-<br>sion class (ª) (spinning phase) | [A/B/C/D] (°)            |  |
| Off-mode (W)                                                                          | X,XX              |      | Standby mode (W)                                                   | X,XX                     |  |
| Delay start (W) (if applicable)                                                       | X,                | XX   | Networked standby (W) (if applicable)                              | x,xx                     |  |

# Minimum duration of the guarantee offered by the supplier (b):

| This product has been designed to release silver ions<br>during the washing cycle | [YES/NO] |
|-----------------------------------------------------------------------------------|----------|
|-----------------------------------------------------------------------------------|----------|

### Additional information:

Weblink to the supplier's website, where the information in point 9 of Annex II to Commission Regulation (EU) 2019/2023 (1) (b) is found:

(<sup>a</sup>) for the eco 40-60 programme.

(<sup>b</sup>) changes to these items shall not be considered relevant for the purposes of paragraph 4 of Article 4 of Regulation (EU) 2017/1369. (<sup>c</sup>) if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

### 2. Household washer-dryers

Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 6.

The user manual or other literature provided with the product shall clearly indicate the link to the model in the product database as a human-readable Uniform Resource Locator (URL) or as QR code or by providing the product registration number.

<sup>(1)</sup> Commission Regulation (EU) 2019/2023 of 1 October 2019 laying down ecodesign requirements for household washing machines and household washer-dryers pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EU) No 1015/2010 (see page 285 of this Official Journal).

| Table | 6 |
|-------|---|
|-------|---|

# Content, order and format of the product information sheet

# Supplier's name or trade mark:

Supplier's address (°):

# Model identifier:

# General product parameters:

| Parameter                                                                                                                                                                                                                                                          | Va                                                                                                                                                                                                                                    | lue  | Parameter                                                                                                                                                                                                                                                       | Value                              |                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|--------------------------------------|
|                                                                                                                                                                                                                                                                    | Rated<br>capacity ( <sup>b</sup> )                                                                                                                                                                                                    | X,X  |                                                                                                                                                                                                                                                                 | Height                             | X                                    |
| Rated capacity (kg)                                                                                                                                                                                                                                                | Rated                                                                                                                                                                                                                                 |      | Dimensions in cm                                                                                                                                                                                                                                                | Width                              | X                                    |
|                                                                                                                                                                                                                                                                    | capacity ( <sup>a</sup> )                                                                                                                                                                                                             | X,X  |                                                                                                                                                                                                                                                                 | Depth                              | X                                    |
| Energy Efficiency Index                                                                                                                                                                                                                                            | EEI <sub>W</sub> (ª)                                                                                                                                                                                                                  | x,x  | Energy afficiency class                                                                                                                                                                                                                                         | EEI <sub>W</sub> (ª)               | [A/B/C/D/E<br>/F/G] ( <sup>d</sup> ) |
| Energy Enficiency macx                                                                                                                                                                                                                                             | EEI <sub>WD</sub> ( <sup>b</sup> )                                                                                                                                                                                                    | x,x  | - Lifergy enficiency class                                                                                                                                                                                                                                      | EEI <sub>WD</sub> ( <sup>b</sup> ) | [A/B/C/D/E<br>/F/G] ( <sup>d</sup> ) |
| Washing officiency index                                                                                                                                                                                                                                           | I <sub>W</sub> ( <sup>a</sup> )                                                                                                                                                                                                       | x,xx | Rinsing effectiveness (g/kg dry                                                                                                                                                                                                                                 | I <sub>R</sub> (ª)                 | X,X                                  |
| washing effective fildex                                                                                                                                                                                                                                           | J <sub>W</sub> ( <sup>b</sup> )                                                                                                                                                                                                       | x,xx | textile)                                                                                                                                                                                                                                                        | J <sub>R</sub> ( <sup>b</sup> )    | X,X                                  |
| Energy consumption in kWh per<br>kg per cycle, for the washing cycle<br>of the household washer-dryer,<br>using the eco 40-60 programme at<br>a combination of full and partial<br>loads. Actual energy consumption<br>will depend on how the appliance<br>is used | Energy consumption in kWh per<br>kg per cycle, for the wash and dry<br>cycle of the household washer-<br>dryer at a combination of full and<br>half loads. Actual energy con-<br>sumption will depend on how the<br>appliance is used |      | x,xxx                                                                                                                                                                                                                                                           |                                    |                                      |
| Water consumption in litre per<br>cycle, for the eco 40-60 pro-<br>gramme at a combination of full<br>and partial loads. Actual water<br>consumption will depend on how<br>the appliance is used and on the<br>hardness of the water                               | 2                                                                                                                                                                                                                                     | C    | Water consumption in litre per<br>cycle, for the wash and dry cycle<br>of the household washer-dryer at<br>a combination of full and half<br>loads. Actual water consumption<br>will depend on how the appliance<br>is used and on the hardness of the<br>water | x                                  |                                      |
| Maximum temperature inside the                                                                                                                                                                                                                                     | Rated<br>washing<br>capacity                                                                                                                                                                                                          | X    | Remaining maisture content (2)                                                                                                                                                                                                                                  | Rated<br>washing<br>capacity       | x                                    |
| treated textile (°C) (ª)                                                                                                                                                                                                                                           | Half                                                                                                                                                                                                                                  | X    | (%)                                                                                                                                                                                                                                                             | Half                               | X                                    |
|                                                                                                                                                                                                                                                                    | Quarter                                                                                                                                                                                                                               | х    |                                                                                                                                                                                                                                                                 | Quarter                            | X                                    |

|                                                                                                                                                       | Rated<br>washing x<br>capacity |                                       |                                                                                                                                  |                     |                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------|
| Spin speed (rpm) (*)                                                                                                                                  | Half                           | Х                                     | Spin-drying efficiency class (*)                                                                                                 | [A/B/C/D/E/F/G] (*) |                       |
|                                                                                                                                                       | Quarter                        | х                                     |                                                                                                                                  |                     |                       |
| Eco 40-60 programme duration                                                                                                                          | Rated<br>washing<br>capacity   | x:xx                                  | wash and dry cycle duration                                                                                                      | Rated<br>capacity   | x:xx                  |
| (h:min)                                                                                                                                               | Half                           | x:xx                                  | (h:min)                                                                                                                          | Half                | x:xx                  |
|                                                                                                                                                       | Quarter                        | x:xx                                  |                                                                                                                                  |                     |                       |
| Airborne acoustical noise emis-<br>sions during the spinning phase<br>for the eco 40-60 washing cycle at<br>rated washing capacity (dB(A) re<br>1 pW) | x                              |                                       | Airborne acoustical noise emis-<br>sion class for the spinning phase<br>for the eco 40-60 programme at<br>rated washing capacity | [A/B/0              | C/D] ( <sup>d</sup> ) |
| Туре                                                                                                                                                  | [built-in/free-standing]       |                                       |                                                                                                                                  |                     |                       |
| Off-mode (W)                                                                                                                                          | X,2                            | xx                                    | Standby mode (W)                                                                                                                 | x,xx                |                       |
| Delay start (W) (if applicable) x,xx                                                                                                                  |                                | Networked standby (W) (if applicable) | X,XX                                                                                                                             |                     |                       |

Minimum duration of the guarantee offered by the supplier (°):

| This product has been designed to release silver ions during the washing cycle | [YES/NO] |
|--------------------------------------------------------------------------------|----------|
|--------------------------------------------------------------------------------|----------|

# Additional information:

Weblink to the supplier's website, where the information in point 9 of Annex II to Regulation (EU) 2019/2023 is found (<sup>b</sup>):

(ª) for the eco 40-60 programme (<sup>b</sup>) for the wash and dry cycle

(\*) changes to these items shall not be considered relevant for the purposes of paragraph 4 of Article 4 of Regulation (EU) 2017/1369. (d) if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

# ANNEX VI

# **Technical documentation**

- 1. For household washing machines, the technical documentation referred to in point 1(d) of Article 3 shall include:
  - (a) information as set out in point 1 of Annex V;
  - (b) information as set out in Table 7; these values are considered as the declared values for the purpose of the verification procedure in Annex IX;

# Table 7

# Information to be included in the technical documentation for household washing machines

| PARAMETER                                                                                           | UNIT      | VALUE |
|-----------------------------------------------------------------------------------------------------|-----------|-------|
| Rated capacity for the eco 40-60 programme, at 0,5 kg intervals (c)                                 | kg        | X,X   |
| Energy consumption of the eco 40-60 programme at rated capacity ( $E_{W,full}$ )                    | kWh/cycle | X,XXX |
| Energy consumption of the eco 40-60 programme at half rated capacity ( $E_{W,V_2}$ )                | kWh/cycle | X,XXX |
| Energy consumption of the eco 40-60 programme at quarter rated capacity $(E_{W,1/4})$               | kWh/cycle | X,XXX |
| Weighted energy consumption of the eco 40-60 programme ( $E_{\rm W}$ )                              | kWh/cycle | X,XXX |
| Standard energy consumption of the eco 40-60 programme (SCE <sub>w</sub> )                          | kWh/cycle | X,XXX |
| Energy Efficiency Index (EEI <sub>W</sub> )                                                         |           | X,X   |
| Water consumption of the eco 40-60 programme at rated capacity ( $W_{W,full}$ )                     | L/cycle   | X,X   |
| Water consumption of the eco 40-60 programme at half rated capacity $(W_{W, {\scriptstyle {V_2}}})$ | L/cycle   | X,X   |
| Water consumption of the eco 40-60 programme at quarter rated capacity $(W_{W,1/4})$                | L/cycle   | X,X   |
| Weighted water consumption (W <sub>W</sub> ) L/cy                                                   |           | X     |
| Washing efficiency index of the eco 40-60 programme at rated capacity $\left(I_{w}\right)$          |           | X,XX  |
| Washing efficiency index of the eco 40-60 programme at half rated capacity ( $I_w$ )                |           | X,XX  |
| Washing efficiency index of the eco 40-60 programme at quarter rated capacity ( $I_w$ )             | _         | X,XX  |

| PARAMETER                                                                                                                    | UNIT          | VALUE |  |
|------------------------------------------------------------------------------------------------------------------------------|---------------|-------|--|
| Rinsing effectiveness of the eco 40-60 programme at rated capacity ( $I_R$ )                                                 | g/kg          | X,X   |  |
| Rinsing effectiveness of the eco 40-60 programme at half rated capacity $(I_R)$                                              | g/kg          | X,X   |  |
| Rinsing effectiveness of the eco 40-60 programme at quarter rated capacity $(I_R)$                                           | g/kg          | X,X   |  |
| Programme duration of the eco 40-60 programme at rated capacity ( $t_w$ )                                                    | h:min         | X:XX  |  |
| Programme duration of the eco 40-60 programme at half rated capacity ( $t_w$ )                                               | h:min         | X:XX  |  |
| Programme duration of the eco 40-60 programme at quarter rated capacity ( $t_w$ )                                            | h:min         | X:XX  |  |
| Temperature reached for minimum 5 min inside the load during eco 40-60 programme at rated capacity (T)                       | °C            | X     |  |
| Femperature reached for minimum 5 min inside the load during eco 40-60 °C orogramme at half rated capacity (T)               |               |       |  |
| Femperature reached for minimum 5 min inside the load during eco 40-60   °C     programme at quarter rated capacity (T)   °C |               |       |  |
| Spin speed in the spinning phase of the eco 40-60 programme at rated capacity (S)                                            | X             |       |  |
| Spin speed in the spinning phase of the eco 40-60 programme at half rated rpm capacity (S)                                   |               | X     |  |
| Spin speed in the spinning phase of the eco 40-60 programme at quarter rpm rated capacity (S)                                |               | X     |  |
| Remaining moisture content for the eco 40-60 programme at rated capacity % (D <sub>full</sub> )                              |               | X     |  |
| Remaining moisture content for the eco 40-60 programme at half rated % capacity $(D_{1/2})$                                  |               | X     |  |
| Remaining moisture content for the eco 40-60 programme at quarter rated % capacity (D <sub>1/4</sub> )                       |               | X     |  |
| Weighted remaining moisture content (D)                                                                                      | %             | X     |  |
| Airborne acoustical noise emissions during eco 40-60 programme (spinning phase)                                              | dB(A) re 1 pW | X     |  |
| Power consumption in 'off mode' (P <sub>o</sub> )                                                                            | W             | X,XX  |  |

| PARAMETER                                                                                                          | UNIT | VALUE  |
|--------------------------------------------------------------------------------------------------------------------|------|--------|
| Power consumption in 'standby mode' (P <sub>sm</sub> )                                                             | W    | X,XX   |
| Does 'standby mode' include the display of information?                                                            | _    | Yes/No |
| Power consumption in 'standby mode' $(\mathrm{P}_{\mathrm{sm}})$ in condition of networked standby (if applicable) | W    | X,XX   |
| Power consumption in 'delay start' (P <sub>ds</sub> ) (if applicable)                                              | W    | X,XX   |

(c) where appropriate, the references of the harmonised standards applied;

(d) where appropriate, the other technical standards and specifications used;

(e) the details and the results of calculations performed in accordance with Annex IV;

(f) a list of all equivalent models including the model identifier.

2. For household washer-dryers, the technical documentation referred to in point 1(d) of Article 3 shall include:

- (a) information as set out in point 2 of Annex V;
- (b) information as set out in Table 8; these values are considered as the declared values for the purpose of the verification procedure in Annex IX;

Table 8

# Information to be included in the technical documentation for household washer-dryers

| PARAMETER                                                                                                   | UNIT      | VALUE |
|-------------------------------------------------------------------------------------------------------------|-----------|-------|
| Rated capacity for the washing cycle, at 0,5 kg intervals (c)                                               | kg        | X,X   |
| Rated capacity for the wash and dry cycle, at 0,5 kg intervals (d)                                          | kg        | X,X   |
| Energy consumption of the eco 40-60 programme at rated washing capacity $(\!E_{W\!,full}\!)$                | kWh/cycle | X,XXX |
| Energy consumption of the eco 40-60 programme at half of the rated washing capacity $(E_{\rm W, \slash 2})$ | kWh/cycle | X,XXX |
| Energy consumption of the eco 40-60 programme at a quarter of the rated washing capacity $(E_{\rm W,1/4})$  | kWh/cycle | X,XXX |
| Weighted energy consumption of the eco 40-60 programme ( $E_{\rm W}$ )                                      | kWh/cycle | X,XXX |
| Standard energy consumption of the eco 40-60 programme (SCE <sub>w</sub> ) kWh/                             |           | X,XXX |
| Energy Efficiency Index of the washing cycle (EEI <sub>w</sub> )                                            |           | X,X   |
| Energy consumption of the wash and dry cycle at rated capacity (E <sub>WD,full</sub> ) kV                   |           | X,XXX |
| Energy consumption of the wash and dry cycle at half rated capacity ( $E_{WD,1/2}$ )                        | kWh/cycle | X,XXX |

| PARAMETER                                                                                                 | UNIT      | VALUE |
|-----------------------------------------------------------------------------------------------------------|-----------|-------|
| Weighted energy consumption of the wash and dry cycle ( $E_{WD}$ )                                        | kWh/cycle | X,XXX |
| Standard energy consumption of the wash and dry cycle (SCE $_{\rm WD}$ )                                  | kWh/cycle | X,XXX |
| Energy Efficiency Index of the wash and dry cycle ( $\text{EEI}_{\text{WD}}$ )                            |           | X,X   |
| Water consumption of the eco 40-60 programme at rated washing capacity ( $W_{W,full}$ )                   | L/cycle   | X,X   |
| Water consumption of the eco 40-60 programme at half of the rated washing capacity $(W_{W,\!\prime\!2})$  | L/cycle   | X,X   |
| Water consumption of the eco 40-60 programme at a quarter of the rated washing capacity $(W_{\rm W,1/4})$ | L/cycle   | X,X   |
| Weighted water consumption of the washing cycle $(W_w)$                                                   | L/cycle   | X     |
| Water consumption of the wash and dry cycle at rated capacity ( $W_{WD,full}$ )                           | L/cycle   | X,X   |
| Water consumption of the wash and dry cycle at half rated capacity ( $W_{WD, \frac{1}{2}}$ )              | L/cycle   | X,X   |
| Weighted water consumption of the wash and dry cycle ( $W_{WD}$ )                                         | L/cycle   | X     |
| Washing efficiency index of the eco 40-60 programme at rated washing capacity ( $I_w$ )                   |           | X,XX  |
| Washing efficiency index of the eco 40-60 programme at half rated washing capacity ( $I_w$ )              |           | X,XX  |
| Washing efficiency index of the eco 40-60 programme at quarter rated washing capacity $(I_{\rm w})$       | _         | X,XX  |
| Washing efficiency index of the wash and dry cycle at rated capacity $(J_w)$                              |           | X,XX  |
| Washing efficiency index of the wash and dry cycle at half rated capacity ( $J_w$ )                       |           | X,XX  |
| Rinsing effectiveness of the eco 40-60 programme at rated washing capacity $(I_R)$                        |           | X,X   |
| Rinsing effectiveness of the eco 40-60 programme at half rated washing capacity $(I_R)$                   |           | X,X   |
| Rinsing effectiveness of the eco 40-60 programme at quarter rated washing capacity $(I_R)$                | g/kg      | X,X   |
| Rinsing effectiveness of the wash and dry cycle at rated capacity $(J_R)$                                 | g/kg      | X,X   |

| PARAMETER                                                                                                                          | UNIT  | VALUE |  |
|------------------------------------------------------------------------------------------------------------------------------------|-------|-------|--|
| Rinsing effectiveness of the wash and dry cycle at half rated capacity $(J_R)$                                                     | g/kg  | X,X   |  |
| Programme duration of the eco 40-60 programme at rated washing capacity $(t_w)$                                                    | h:min | X:XX  |  |
| Programme duration of the eco 40-60 programme at half rated washing capacity $(t_{\rm w})$                                         | h:min | X:XX  |  |
| Programme duration of the eco 40-60 programme at quarter rated washing capacity $(t_w)$                                            | h:min | X:XX  |  |
| Cycle duration of the wash and dry cycle at rated capacity $(t_{WD})$                                                              | h:min | X:XX  |  |
| Cycle duration of the wash and dry cycle at half rated capacity $(t_{WD})$                                                         | h:min | X:XX  |  |
| Temperature reached for minimum 5 min inside the load during eco 40-60   °C     programme at rated washing capacity (T)   °C       |       |       |  |
| Femperature reached for minimum 5 min inside the load during eco 40-60 °C programme at half rated washing capacity (T)             |       |       |  |
| Temperature reached for minimum 5 min inside the load during eco 40-60 programme at quarter rated washing capacity (T)             |       | X     |  |
| Temperature reached for minimum 5 min inside the load in the washing cycle during wash and dry cycle at rated capacity (T)         |       | X     |  |
| Temperature reached for minimum 5 min inside the load in the washing cycle °C during wash and dry cycle at half rated capacity (T) |       | X     |  |
| Spin speed in the spinning phase of the eco 40-60 programme at rated washing capacity (S)                                          |       | Х     |  |
| Spin speed in the spinning phase of the eco 40-60 programme at half rated rpm washing capacity (S)                                 |       | Х     |  |
| Spin speed in the spinning phase of the eco 40-60 programme at quarter rpm rated washing capacity (S)                              |       | Х     |  |
| Remaining moisture content for the eco 40-60 programme at rated washing % capacity (D <sub>full</sub> )                            |       | X     |  |
| Remaining moisture content for the eco 40-60 programme at half rated washing capacity $\left(D_{1/2}\right)$                       | %     | X     |  |

| PARAMETER                                                                                                              | UNIT          | VALUE  |
|------------------------------------------------------------------------------------------------------------------------|---------------|--------|
| Remaining moisture content for the eco 40-60 programme at quarter rated washing capacity $(\mathrm{D}_{\mathrm{1/4}})$ | %             | Х      |
| Weighted remaining moisture content after washing (D)                                                                  | %             | Х      |
| Final moisture content after drying                                                                                    | %             | X,X    |
| Airborne acoustical noise emissions during eco 40-60 programme (spinning phase)                                        | dB(A) re 1 pW | Х      |
| Power consumption in 'off mode' (P <sub>o</sub> )                                                                      | W             | X,XX   |
| Power consumption in 'standby mode' (P <sub>sm</sub> )                                                                 | W             | X,XX   |
| Does 'standby mode' include the display of information?                                                                | —             | Yes/No |
| Power consumption in 'standby mode' $(\mathrm{P}_{\mathrm{sm}})$ in condition of networked standby (if applicable)     | W             | X,XX   |
| Power consumption in 'delay start' (P <sub>ds</sub> ) (if applicable)                                                  | W             | X,XX   |

(c) where appropriate, the references of the harmonised standards applied;

(d) where appropriate, the other technical standards and specifications used;

(e) the details and the results of calculations performed in accordance with Annex IV;

(f) a list of all equivalent models including the model identifier.

3. Where the information included in the technical documentation for a particular household washing machine or household washer-dryer model has been obtained by any of the following methods, or both:

- from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different supplier,

— by calculation on the basis of design or extrapolation from another model of the same or a different supplier,

the technical documentation shall include the details of such calculation, the assessment undertaken by suppliers to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different suppliers.

### ANNEX VII

# Information to be provided in visual advertisements, in technical promotional material in distance selling and in telemarketing, except distance selling on the internet

- 1. In visual advertisements for household washing machines or household washer-dryers, for the purposes of ensuring conformity with the requirements laid down in point 1(e) of Article 3 and point (c) of Article 4, the energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 2. In technical promotional material for household washing machines or household washer-dryers, for the purposes of ensuring conformity with the requirements laid down in point 1(f) of Article 3 and point (d) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 3. Any paper-based distance selling of household washing machines or household washer-dryers must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in point 4 of this Annex.
- 4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:
  - (a) for household washing machines: an arrow, containing the letter of the energy efficiency class in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
  - (b) for household washer-dryers: an arrow, containing the letter of the energy efficiency class for the complete cycle in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
  - (c) the colour of the arrow matching the colour of the energy efficiency class;
  - (d) the range of available energy efficiency classes in 100 % black; and,
  - (e) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

### Figure 1

Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



- 5. Telemarketing-based distance selling must specifically inform the customer of the energy efficiency classes of the product and of the range of energy efficiency classes available on the label, and that the customer can access the label and the product information sheet through the product database website, or by requesting a printed copy.
- 6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

### ANNEX VIII

### Information to be provided in the case of distance selling through the internet

- 1. The appropriate label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in Annex IV. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 2 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
- 2. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall:
  - (a) for household washing machines: be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
  - (b) for household washer-dryers: be an arrow in the colour corresponding to the energy efficiency class of the complete cycle on the label;
  - (c) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;
  - (d) have the range of available energy efficiency classes in 100 % black; and,
  - (e) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

### Figure 2

# Coloured left/right arrow, with range of energy efficiency classes indicated



- 3. In the case of nested display, the sequence of display of the label shall be as follows:
  - (a) the images referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
  - (b) the images shall link to the label set out in Annex III;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
  - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency classes of the product in a font size equivalent to that of the price.
- 4. The electronic product information sheet made available by suppliers in accordance with point 1(h) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

#### ANNEX IX

### Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of Member States shall apply the following procedure:

- 1. The Member State authorities shall verify one single unit of the model.
- 2. The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
  - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class, the airborne acoustical noise emission class and the spin drying efficiency class are not more favourable for the supplier than the class determined by the declared values; and
  - (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 9.
- 3. If the results referred to in points 2(a) or (b) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 4. If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- 5. The model shall be considered to comply with the applicable requirements if for these three units, the arithmetical mean of the determined values complies with the respective tolerances given in Table 9.
- 6. If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 7. The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 and 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex IV.

The Member State authorities shall only apply the verification tolerances that are set out in Table 9 and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 9, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

# Table 9

# Verification tolerances

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Verification tolerances                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $E_{W,full}$ , $E_{W,1/4}$ , $E_{WD,full}$ , $E_{WD,1/4}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The determined value (*) shall not exceed the declared value of $E_{W,full}$ , $E_{W,1/4}$ , $E_{WD,full}$ and $E_{WD,1/2}$ , respectively, by more than 10 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Weighted energy consumption ( $E_{\rm W}$ and $E_{\rm WD}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The determined value (*) shall not exceed the declared value of $E_W$ , respectively $E_{WD}$ , by more than 10 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| $$W_{W\!,f\!ull}$, $W_{W\!,l\!\prime 2}$, $W_{W\!,1/4,}$, $W_{WD,f\!ull}$, $W_{WD,l\!\prime 2}$, $W_{WD,l\!\prime 2}$ | The determined value (*) shall not exceed the declared value of $W_{W,full}$ , $W_{W,f$ |
| Weighted water consumption (W $_{\rm W}$ and W $_{\rm WD}$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The determined value (*) shall not exceed the declared value of $W_W$ , respectively $W_{WD}$ , by more than 10 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Washing efficiency index ( $I_W$ and $J_W$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The determined value (*) shall not be less than the declared value of $I_W$ , respectively $J_w$ , by more than 8 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Rinsing effectiveness ( $I_R$ and $J_R$ )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The determined value (*) shall not exceed the declared value of $I_R$ , respectively $J_R$ , by more than 1,0 g/kg.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| programme or cycle duration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | The determined value (*) of the programme or cycle duration shall not exceed the declared value by more than 5 % or by more than 10 minutes, whichever is smaller.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Maximum temperature inside the laun-<br>dry (T)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The determined value (*) shall not be less than the declared values of T by more than 5K and it shall not exceed the declared value of T by more than 5K.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| $\overline{D_{\text{full}}, D_{\scriptscriptstyle 1/2}, D_{\scriptscriptstyle 1/4}}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The determined value (*) shall not exceed the declared value of $D_{full}$ , $D_{1/4}$ , $D_{1/4}$ , respectively, by more than 10 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Remaining moisture content after washing (D)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The determined value (*) shall not exceed the declared value of D by more than 10 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Final moisture content after drying                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | The determined value (*) shall not exceed 3,0 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Spin speed (S)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | The determined value (*) shall not be less than the declared value of S by more than 10 %.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Power consumption in off mode (P <sub>o</sub> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The determined value (*) of power consumption $P_0$ shall not exceed the declared value by more than 0,10 W.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Power consumption in standby mode $(P_{sm})$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | The determined value (*) of power consumption $P_{sm}$ shall not exceed the declared value by more than 10% if the declared value is higher than 1,00 W, or by more than 0,10 W if the declared value is lower than or equal to 1,00 W.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Parameter                                           | Verification tolerances                                                                                                                                                                                                                 |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power consumption in delay start (P <sub>ds</sub> ) | The determined value (*) of power consumption $P_{ds}$ shall not exceed the declared value by more than 10% if the declared value is higher than 1,00 W, or by more than 0,10 W if the declared value is lower than or equal to 1,00 W. |
| Airborne acoustical noise emissions                 | The determined value (*) shall not exceed the declared value by more than 2 dB re 1 pW.                                                                                                                                                 |

(\*) In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

### ANNEX X

### Multi-drum household washing machines and multi-drum household washer-dryers

The provisions of Annexes II and III, following the measurement and calculation methods set out in Annex IV, shall apply to any drum with a rated capacity higher than or equal to 2 kg of multi-drum household washing machines and to any drum with a rated washing capacity higher than or equal to 2 kg of multi-drum household washer-dryers.

The provisions of Annexes II and III shall apply to each of the drums independently, except when the drums are built in the same casing and can, in the eco 40-60 programme or in the wash and dry cycle, only operate simultaneously. In the latter case, these provisions shall apply to the multi-drum household washing machine or to the multi-drum household washer-dryer as a whole, as follows:

- (a) the rated washing capacity is the sum of the rated washing capacities of each drum; for multi-drum household washer-dryers, the rated capacity is the sum of the rated capacities of each drum;
- (b) the energy and water consumption of the multi-drum household washing machine and of the washing cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum;
- (c) the energy and water consumption of the complete cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum;
- (d) the Energy Efficiency Index (EEI<sub>W</sub>) is calculated using the rated washing capacity and energy consumption; for multidrum household washer-dryers, the Energy Efficiency Index (EEI<sub>WD</sub>) is calculated using the rated capacity and energy consumption;
- (e) the duration is the duration of the longest eco 40-60 programme, or wash and dry cycle, operating in each drum;
- (f) the residual moisture content after washing is calculated as the weighted average, according to each drum's rated capacity;
- (g) for household multi-drum washer-dryers, the final moisture content after drying is measured individually for each drum;
- (h) the measurement of low power modes, of the acoustic airborne noise emissions and the acoustic airborne noise emissions class apply to the whole household washing machine.

The product information sheet and the technical documentation shall include and present jointly the information required under Annex V and Annex VI, respectively, for all the drums to which the provisions of this annex apply.

The provisions of Annexes VII and VIII apply to each of the drums to which the provisions of this annex apply.

The verification procedure set out in Annex IX applies to the multi-drum household washing machine and to the multidrum household washer-dryer as a whole, with the verification tolerances applying to each of the parameters determined in application of this annex.

### **COMMISSION DELEGATED REGULATION (EU) 2019/2015**

### of 11 March 2019

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU(1), and in particular Article 11(5) and Article 16(1) thereof,

Whereas:

- (1)Regulation (EU) 2017/1369 empowers the Commission to adopt delegated acts as regards the labelling or rescaling of the labelling of product groups representing significant potential for energy savings and, where relevant, other resources.
- The Ecodesign Working Plan 2016-2019 (2) established by the Commission in application of Article 16(1) of (2) Directive 2009/125/EC of the European Parliament and of the Council (3) sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The Ecodesign Working Plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of the current regulations.
- Measures from the Ecodesign Working Plan have an estimated potential to deliver in total in excess of 260 TWh (3) of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Lighting is one of the product groups listed in the Ecodesign Working Plan, with an estimated 41,9 TWh of annual final energy savings in 2030.
- (4) Provisions on the energy labelling of lighting products, namely electrical lamps and luminaires, were established by Commission Delegated Regulation (EU) No 874/2012 (4).
- Lighting products are among the priority product groups mentioned in Article 11(5)(b) of Regulation (EU) (5) 2017/1369 for which the Commission should adopt a delegated act to introduce an A to G rescaled label.
- Delegated Regulation (EU) No 874/2012 contains a review clause in Article 7 requiring the Commission to (6) review the Regulation in light of technological progress.
- The Commission has reviewed Delegated Regulation (EU) No 874/2012 and analysed the technical, environmen-(7) tal and economic aspects of lighting products as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 14 of Regulation (EU) 2017/1369.
- (8) The review concluded that there was a need to introduce revised energy labelling requirements for lighting products, namely for light sources.
- (9) The environmental aspect of light sources that has been identified as significant for the purposes of this Regulation is energy consumption in the use phase.
- The review has shown that the electricity consumption of products subject to this Regulation can be further (10)reduced significantly by implementing energy label measures.

<sup>(&</sup>lt;sup>1</sup>) OJ L 198, 28.7.2017, p. 1.

 <sup>(2)</sup> Communication from the Commission. Ecodesign working plan 2016-2019. COM(2016) 773 final of 30.11.2016.
(3) Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10). (4) Commission Delegated Regulation (EU) No 874/2012 of 12 July 2012 supplementing Directive 2010/30/EU of the European Parlia-

ment and of the Council with regard to energy labelling of electrical lamps and luminaires (OJ L 258, 26.9.2012, p. 1).

- (11) As this Regulation discontinues the energy label specifically dedicated to luminaires in Delegated Regulation (EU) No 874/2012, suppliers of luminaires should be exempted from the obligations related to the product database established under Regulation (EU) 2017/1369.
- (12) Recognising the growth of sales of energy-related products through internet hosting platforms, rather than directly from suppliers' and dealers' websites, it should be clarified that internet sales platforms should be responsible for enabling the displaying of the label provided by the supplier in proximity to the price. They should inform the dealer of that obligation, but should not be responsible for the accuracy or content of the label and the product information sheet provided. However, in application of Article 14(1)(b) of Directive 2000/31/EC of the European Parliament and of the Council (<sup>5</sup>) on electronic commerce, such internet hosting platforms should act expeditiously to remove, or to disable access to, information about the product information sheet), for example if informed by the market surveillance authority. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.
- (13) This Regulation should specify tolerance values for lighting parameters taking into account the approach to information declaration laid down in Commission Delegated Regulation (EU) 2017/254 (°)
- (14) The measures provided for in this Regulation were discussed by the Consultation Forum and the Member States' experts in accordance with Article 14 of Regulation (EU) 2017/1369.
- (15) Delegated Regulation (EU) No 874/2012 should therefore be repealed,

HAS ADOPTED THIS REGULATION:

### Article 1

### Subject matter and scope

1. This Regulation establishes requirements for the labelling of, and the provision of supplementary product information on, light sources with or without integrated control gear. The requirements also apply to light sources placed on the market in a containing product.

- 2. This Regulation shall not apply to light sources specified in points 1 and 2 of Annex IV.
- 3. Light sources specified in point 3 of Annex IV shall comply only with the requirements in point 4 of Annex V.

### Article 2

### Definitions

For the purposes of this Regulation, the following definitions shall apply:

- (1) 'light source' means an electrically operated product intended to emit, or, in the case of a non-incandescent light source, intended to be possibly tuned to emit, light, or both, with all of the following optical characteristics:
  - (a) chromaticity coordinates x and y in the range:

0,270 < x < 0,530; and

- 2,3172 x<sup>2</sup> + 2,3653 x - 0,2199 < y < - 2,3172 x<sup>2</sup> + 2,3653 x - 0,1595;

(b) a luminous flux < 500 lumen per mm<sup>2</sup> of projected light-emitting surface area as defined in Annex I;

<sup>(5)</sup> Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce') (OJ L 178, 17.7.2000, p. 1).

<sup>(&</sup>lt;sup>6</sup>) Commission Delegated Regulation (EU) 2017/254 of 30 November 2016 amending Delegated Regulations (EU) No 1059/2010, (EU) No 1060/2010, (EU) No 1061/2010, (EU) No 1062/2010, (EU) No 626/2011, (EU) No 392/2012, (EU) No 874/2012, (EU) No 665/2013, (EU) No 811/2013, (EU) No 812/2013, (EU) No 65/2014, (EU) No 1254/2014, (EU) 2015/1094, (EU) 2015/1186 and (EU) 2015/1187 with regard to the use of tolerances in verification procedures (OJ L 38, 15.2.2017, p. 1).

- (c) a luminous flux between 60 and 82 000 lumen;
- (d) a colour rendering index (CRI) > 0;

using incandescence, fluorescence, high-intensity discharge, inorganic light emitting diodes (LED) or organic light emitting diodes (OLED), or their combinations as lighting technology, and that can be verified as a light source according to the procedure of Annex IX.

High-pressure sodium (HPS) light sources that do not fulfil condition (a) are considered light sources for the purposes of this Regulation.

Light sources do not include:

- (a) LED dies or LED chips;
- (b) LED packages;
- (c) products containing light source(s) from which these light source(s) can be removed for verification;
- (d) light-emitting parts contained in a light source from which these parts cannot be removed for verification as a light source.
- (2) 'control gear' means one or more devices that may or may not be physically integrated in a light source, intended to prepare the mains for the electric format required by one or more specific light sources within boundary conditions set by electric safety and electromagnetic compatibility. It may include transforming the supply and starting voltage, limiting operational and preheating current, preventing cold starting, correcting the power factor and/or reducing radio interference

The term 'control gear' does not include power supplies within the scope of Commission Regulation (EC) No 278/2009 (7). The term also does not include lighting control parts and non-lighting parts (as defined in Annex I), although such parts may be physically integrated with a control gear or marketed together as a single product.

A Power over Ethernet (PoE) switch is not a control gear in the sense of this Regulation. 'Power-over-Ethernet switch' or 'PoE switch' means equipment for power-supply and data-handling that is installed between the mains and office equipment and/or light sources for the purpose of data transfer and power supply;

- (3) 'containing product' means a product containing one or more light sources, or separate control gears, or both. Examples of containing products are luminaires that can be taken apart to allow separate verification of the contained light source(s), household appliances containing light source(s), furniture (shelves, mirrors, display cabinets) containing light source(s). If a containing product cannot be taken apart for verification of the light source and separate control gear, the entire containing product is to be considered a light source;
- (4) 'light' means electromagnetic radiation with a wavelength between 380 nm and 780 nm;
- (5) 'mains' or 'mains voltage' (MV) means the electricity supply of 230 (± 10 %) volt of alternating current at 50 Hz;
- (6) 'LED die' or 'LED chip' means a small block of light-emitting semiconducting material on which a functional LED circuit is fabricated;
- (7) 'LED package' means a single electric part comprising principally at least one LED die. It does not include a control gear or parts of it, a cap or active electronic components and is not connected directly to the mains voltage. It can include one or more of the following: optical elements, light converters (phosphors), thermal, mechanical and electric interfaces or parts to address electrostatic discharge concerns. Any similar light-emitting devices that are intended to be used directly in an LED luminaire, are considered to be light sources;

<sup>(7)</sup> Commission Regulation (EC) No 278/2009 of 6 April 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies (OJ L 93, 7.4.2009, p. 3).
- (8) 'chromaticity' means the property of a colour stimulus defined by its chromaticity coordinates (x and y);
- (9) 'luminous flux' or 'flux' ( $\Phi$ ), expressed in lumen (lm), means the quantity derived from radiant flux (radiant power) by evaluating the electromagnetic radiation in accordance with the spectral sensitivity of the human eye. It refers to the total flux emitted by a light source in a solid angle of  $4\pi$  steradians under conditions (e.g. current, voltage, temperature) specified in applicable standards. It refers to the initial flux for the undimmed light source after a short operating period, unless it is clearly specified that the flux in a dimmed condition or the flux after a given period of operation is intended. For light sources that can be tuned to emit different light spectra and/or different maximum light intensities, it refers to the flux in the 'reference control settings' as defined in Annex I;
- (10) 'colour rendering index' (CRI) means a metric quantifying the effect of an illuminant on the colour appearance of objects by conscious or subconscious comparison with their colour appearance under the reference illuminant and is the average Ra of the colour rendering for the first 8 test colours (R1-R8) defined in standards;
- (11) 'incandescence' means the phenomenon where light is produced from heat, in light sources typically produced through a threadlike conductor ('filament') which is heated by the passage of an electric current;
- (12) 'halogen light source' means an incandescent light source with a threadlike conductor made from tungsten surrounded by gas containing halogens or halogen compounds;
- (13) 'fluorescence' or 'fluorescent light source' (FL) means the phenomenon or a light source using an electric gas discharge of the low-pressure mercury type in which most of the light is emitted by one or more layers of phosphors excited by the ultraviolet radiation from the discharge. Fluorescent light sources may have one ('single-capped') or two ('double-capped') connections ('caps') to their electricity supply. For the purposes of this Regulation, magnetic induction light sources are also considered as fluorescent light sources;
- (14) 'high intensity discharge' (HID) means an electric gas discharge in which the light- producing arc is stabilised by wall temperature and the arc chamber has a bulb wall loading in excess of 3 watts per square centimetre. HID light sources are limited to metal halide, high-pressure sodium and mercury vapour types as defined in Annex I;
- (15) 'gas discharge' means a phenomenon where light is produced, directly or indirectly, by an electric discharge through a gas, plasma, metal vapour or mixture of gases and vapours;
- (16) 'inorganic light emitting diode' (LED) means a technology in which light is produced from a solid state device embodying a p-n junction of inorganic material. The junction emits optical radiation when excited by an electric current;
- (17) 'organic light emitting diode' (OLED) means a technology in which light is produced from a solid state device embodying a p-n junction of organic material. The junction emits optical radiation when excited by an electric current;
- (18) 'high-pressure sodium light source' (HPS) means a high intensity discharge light source in which the light is produced mainly by radiation from sodium vapour operating at a partial pressure of the order of 10 kilopascals. HPS light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply;
- (19) 'point of sale' means a physical location where the product is displayed or offered for sale, hire or hire-purchase to the customer.

For the purposes of the Annexes, additional definitions are set out in Annex I.

## Article 3

## **Obligations of suppliers**

- 1. Suppliers of light sources shall ensure that:
- (a) each light source which is placed on the market as an independent product (i.e. not in a containing product) and in packaging, is supplied with a label, printed on the packaging, in the format as set out in Annex III;

- (b) the parameters of the product information sheet, as set out in Annex V, are entered into the product database;
- (c) if specifically requested by the dealer, the product information sheet shall be made available in printed form;
- (d) the content of the technical documentation, as set out in Annex VI, is entered into the product database;
- (e) any visual advertisement for a specific model of light source contains the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII and Annex VIII;
- (f) any technical promotional material concerning a specific model of light source, including technical promotional material on the internet, which describes its specific technical parameters, includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (g) an electronic label in the format and containing the information, as set out in Annex III, is made available to dealers for each light source model;
- (h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each light source model;
- (i) upon request by dealers and in accordance with Article 4(e), printed labels to rescale products are provided as a sticker, of the same size as the one which already exists.
- 2. Suppliers of containing products shall:
- (a) provide information on the contained light source(s), as specified in point 2 of Annex V;
- (b) upon request by market surveillance authorities, provide information on how light sources can be removed for verification without permanent damage to the light source.
- 3. The energy efficiency class shall be calculated in accordance with Annex II.

#### Article 4

## **Obligations of dealers**

Dealers shall ensure that:

- (a) At the point of sale, each light source which is not in a containing product bears the label provided by suppliers in accordance with point 1(a) of Article 3, with the label or the energy class being displayed in such a way as to be clearly visible, in accordance with Annex III;
- (b) in the event of distance selling, the label and product information sheet are provided, in accordance with Annexes VII and VIII;
- (c) any visual advertisement for a specific model of light source, including on the internet, contains the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (d) any technical promotional material concerning a specific model of light source, including technical promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (e) existing labels on light sources at points of sale are replaced by the rescaled labels in such a way as to cover the existing label, including when printed on or attached to the package, within eighteen months after the application of this Regulation.

#### Article 5

## **Obligations of internet hosting platforms**

Where a hosting service provider as referred to in Article 14 of Directive 2000/31/EC allows the selling of light sources through its internet site, the service provider shall enable the showing of the electronic label and electronic product information sheet provided by the dealer on the display mechanism in accordance with the provisions of Annex VIII and shall inform the dealer of the obligation to display them.

## Article 6

#### Measurement methods

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation method, as set out in Annex II.

#### Article 7

## Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IX when performing the market surveillance checks referred to in paragraph 3 of Article 8 of Regulation (EU) 2017/1369.

#### Article 8

## Review

The Commission shall review this Regulation in the light of technological progress and present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2024. The review shall among other matters assess the energy efficiency classes, methods to address the energy efficiency of light sources in containing products and the possibility to address circular economy aspects.

### Article 9

## Repeal

Delegated Regulation (EU) No 874/2012 is repealed with effect from 1 September 2021, with the exception of paragraph 2 of Article 3 and paragraph 2 of Article 4 which are repealed with effect from 25 December 2019.

#### Article 10

#### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 September 2021. However, point 1(b) of Article 3 shall apply from 1 May 2021.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 11 March 2019.

For the Commission The President Jean-Claude JUNCKER

#### ANNEX I

#### Definitions applicable for the Annexes

The following definitions shall apply:

- (1) 'mains light source' (MLS) means a light source that can be operated directly on the mains electricity supply. Light sources that operate directly on the mains, and can also operate indirectly on the mains using a separate control gear, shall be considered to be mains light sources;
- (2) 'non-mains light source' (NMLS) means a light source that requires a separate control gear to operate on the mains;
- (3) 'separate control gear' means a control gear that is not physically integrated with a light source and is placed on the market as a separate product or as part of a containing product;
- (4) 'directional light source' (DLS) means a light source having at least 80 % of total luminous flux within a solid angle of  $\pi$  sr (corresponding to a cone with angle of 120°);
- (5) 'non-directional light source' (NDLS) means a light source that is not a directional light source;
- (6) 'connected light source' (CLS) means a light source including data-connection parts that are physically or functionally inseparable from the light emitting parts to maintain the 'reference control settings'. The light source can have physically integrated data-connection parts in a single inseparable housing, or the light source can be combined with physically separate data-connection parts placed on the market together with the light source as a single product;
- (7) 'data-connection parts' means parts that perform any one of the following functions:
  - (a) reception or transmission of wired or wireless data signals and the processing thereof (used to control the light emission function and possibly otherwise);
  - (b) sensing and processing of the sensed signals (used to control the light emission function and possibly otherwise);
  - (c) a combination of these;
- (8) 'colour-tuneable light source' (CTLS) means a light source that can be set to emit light with a large variety of colours outside the range defined in Article 2 but can also be set to emit white light inside the range defined in Article 2 for which the light source is within the scope of this Regulation.

Tuneable-white light sources that can only be set to emit light with different correlated colour temperatures, within the range defined in Article 2, and dim-to-warm light sources that shift their white light output to lower correlated colour temperature when dimmed, simulating the behaviour of incandescent light sources, are not considered CTLS;

- (9) 'excitation purity' means a percentage computed for a CTLS set to emit light of a certain colour, using a procedure further defined in standards, by drawing a straight line on an (x and y) colour space graph from a point with colour coordinates x = 0,333 and y = 0,333 (achromatic stimulus; point (1), going through the point representing the (x and y) colour coordinates of the light source (point (2), and ending on the outer border of the colour space (locus; point (3). The excitation purity is computed as the distance between points 1 and 2 divided by the distance between points 1 and 3. The full length of the line represents 100 % colour purity (point on the locus). The achromatic stimulus point represents 0 % colour purity (white light);
- (10) 'high-luminance light source' (HLLS) means a LED light source with an average luminance greater than 30 cd/mm<sup>2</sup> in the direction of peak intensity;

- (11) 'luminance' (in a given direction, at a given point of a real or imaginary surface) means the luminous flux transmitted by an elementary beam passing through the given point and propagating in the solid angle containing the given direction divided by the area of a section of that beam containing the given point (cd/m<sup>2</sup>);
- (12) 'average luminance' (Luminance-HLLS) for a LED light source means the average luminance over a light-emitting area where the luminance is more than 50 % of the peak luminance (cd/mm<sup>2</sup>);
- (13) 'lighting control parts' means parts that are integrated in a light source, or physically separated but marketed together with a light source as a single product, that are not strictly necessary for the light source to emit light at full-load, but that enable manual or automatic-, direct- or remote-, control of luminous intensity, chromaticity, correlated colour temperature, light spectrum and/or beam angle. Dimmers shall also be considered as lighting control parts.

The term also includes data-connection parts, but the term does not include devices within the scope of Commission Regulation (EC) No 1275/2008 (<sup>1</sup>);

(14) 'non-lighting parts' means parts that are integrated in a light source, or physically separated but marketed together with a light source as a single product, that are not necessary for the light source to emit light at full-load, and that are not 'lighting control parts'. Examples include, but are not limited to: speakers (audio), cameras, repeaters for communication signals to extend the range (e.g. WiFi), parts supporting grid balance (switching to own internal batteries when necessary), battery charging, visual notification of events (mail arriving, door bell ringing, alert), use of Light Fidelity (Li-Fi, a bidirectional, high-speed and fully networked wireless communication technology).

The term also includes data-connection parts used for other functions than to control the light emission function;

- (15) 'useful luminous flux' ( $\Phi_{use}$ ) means the part of the luminous flux of a light source that is considered when determining its energy efficiency:
  - for non-directional light sources it is the total flux emitted in a solid angle of  $4\pi$  sr (corresponding to a 360° sphere);
  - for directional light sources with beam angle ≥ 90° it is the flux emitted in a solid angle of π sr (corresponding to a cone with angle of 120°);
  - for directional light sources with beam angle <  $90^{\circ}$  it is the flux emitted in a solid angle of  $0.586\pi$  sr (corresponding to a cone with angle of  $90^{\circ}$ );
- (16) 'beam angle' of a directional light source means the angle between two imaginary lines in a plane through the optical beam axis, such that these lines pass through the centre of the front face of the light source and through points at which the luminous intensity is 50 % of the centre beam intensity, where the centre beam intensity is the value of luminous intensity measured on the optical beam axis.

For light sources that have different beam angles in different planes, the largest beam angle shall be the one taken into account;

For light sources with user-controllable beam angle, the beam angle corresponding to the 'reference control setting' shall be the one taken into account;

- (17) 'full-load' means the condition of a light source, within the declared operating conditions, in which it emits the maximum (undimmed) luminous flux;
- (18) 'standby mode' means the condition of a light source, where it is connected to the power supply but the light source is intentionally not emitting light, and the light source is awaiting a control signal to return to a state with light emission. Lighting control parts enabling the standby function shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimised following manufacturer's instructions;

<sup>(&</sup>lt;sup>1</sup>) Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p. 45).

- (19) 'networked standby mode' means the condition of a CLS where it is connected to the power supply but the light source is intentionally not emitting light and is awaiting a remotely initiated trigger to return to a state with light emission. Lighting control parts shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimised following the manufacturer's instructions;
- (20) 'control mode' means the condition of lighting control parts where they are connected to the light source and performing their functions in such a way that a control signal can be internally generated or a remotely initiated trigger can be received, by wire or wireless, and processed to lead to a change in the light emission of the light source;
- (21) 'remotely initiated trigger' means a signal that comes from outside the light source via a network;
- (22) 'control signal' means an analogue or digital signal transmitted to the light source wirelessly or wired either via voltage modulation in separate control cables or via a modulated signal in the supply voltage. The signal transmission is not through a network but e.g. from an internal source or from a remote control delivered with the product;
- (23) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (24) 'on-mode power' (P<sub>on</sub>) expressed in watt, means the electric power consumption of a light source in full-load with all lighting control parts and non-lighting parts disconnected. If these parts cannot be disconnected they shall be switched off or their power consumption shall be minimised following the manufacturer's instructions. In case of a NMLS that requires a separate control gear to operate, P<sub>on</sub> can be measured directly on the input to the light source, or P<sub>on</sub> is determined using a control gear with known efficiency, whose electric power consumption is subsequently subtracted from the measured mains power input value;
- (25) 'standby power'  $(P_{sb})$  expressed in watt, is the electric power consumption of a light source in standby mode;
- (26) 'networked standby power' (P<sub>net</sub>) expressed in watt, is the electric power consumption of a CLS in networked standby mode;
- (27) 'reference control settings' (RCS) means a control setting or a combination of control settings that is used to verify compliance of a light source with this Regulation. These settings are relevant for light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light.

In principle, the reference control settings shall be those predefined by the manufacturer as factory default values, and encountered by the user at first installation (out-of-the-box values). If the installation procedure provides for an automatic software update during first installation, or if the user has the option to perform such an update, the resulting change in settings (if any) shall be taken into account.

If the out-of-the-box value is deliberately set differently to the reference control setting (e.g. at low power for safety purposes), the manufacturer shall indicate in the technical documentation how to recall the reference control settings for compliance verification and provide a technical justification why the out-of-the-box value is set differently to the reference control setting.

The light source manufacturer shall define the reference control settings such that:

- the light source is within the scope of this Regulation according to Article 1 and none of the conditions for exemption applies;
- lighting control parts and non-lighting parts are disconnected or switched-off, or, in case this is not possible, the power consumption of these parts is minimal;
- the full-load condition is obtained;
- when the end-user opts to reset factory defaults, the reference control settings are obtained.

For light sources that allow the manufacturer of a containing product to make implementation choices that influence light source characteristics (e.g. definition of the operating current(s); thermal design), and that cannot be controlled by the end-user, the reference control settings need not be defined. In that case the nominal test conditions as defined by the light source manufacturer apply;

- (28) 'high-pressure mercury light source' means a high intensity discharge light source in which the major portion of light is produced, directly or indirectly, by radiation from predominantly vaporised mercury operating at a partial pressure in excess of 100 kilopascals;
- (29) 'metal halide light source' (MH) means a high intensity discharge light source in which the light is produced by radiation from a mixture of metallic vapour, metal halides and the products of the dissociation of metal halides. MH light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply. The material for the arc tube of MH light sources can be quartz (QMH) or ceramic (CMH);
- (30) 'compact fluorescent light source' (CFL) means a single-capped fluorescent light source with a bent-tube construction designed to fit in small spaces. CFLs may be primarily spiral-shaped (i.e. curly forms) or primarily shaped as connected multiple parallel tubes, with or without a second bulb-like envelope. CFLs are available with (CFLi) or without (CFLni) physically integrated control gear;
- (31) 'T2', 'T5', 'T8', 'T9' and 'T12' means a tubular light source with diameter of approximately 7, 16, 26, 29 and 38 mm respectively, as defined in standards. The tube can be straight (linear) or bent (e.g. U-shaped, circular);
- (32) 'LFL T5-HE' means a high-efficiency linear fluorescent T5 light source with driving current lower than 0,2 A;
- (33) 'LFL T5-HO' means a high-output linear fluorescent T5 light source with driving current higher than or equal to 0,2 A;
- (34) 'HL R7s' means a mains-voltage, double-capped, linear halogen light source with a cap diameter of 7 mm;
- (35) 'battery-operated' means a product that operates only on direct current (DC) supplied from a source contained in the same product, without being connected directly or indirectly to the mains electricity supply;
- (36) 'second envelope' means a second outer envelope on a HID light source that is not required for the production of light, such as an external sleeve for preventing mercury and glass release into the environment in case of lamp breakage. In determining the presence of a second envelope, the HID arc tubes shall not count as an envelope;
- (37) 'non-clear envelope' for a HID light source means a non-transparent outer envelope or outer tube in which the light producing arc tube is not visible;
- (38) 'anti-glare shield' means a mechanical or optical reflective or non-reflective impervious baffle designed to block direct visible radiation emitted from the light emitter in a directional light source, in order to avoid temporary partial blindness (disability glare) if viewed directly by an observer. It does not include surface coating of the light emitter in the directional light source;
- (39) 'flicker' means the perception of visual unsteadiness induced by a light stimulus, the luminance or spectral distribution of which fluctuates with time, for a static observer in a static environment. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

The metric for flicker used in this Regulation is the parameter 'Pst LM', where 'st' stands for short term and 'LM' for light flickermeter method, as defined in standards. A value Pst LM = 1 means that the average observer has a 50 % probability of detecting flicker;

(40) 'stroboscopic effect' means a change in motion perception induced by a light stimulus the luminance or spectral distribution of which fluctuates with time, for a static observer in a non-static environment. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

The metric for the stroboscopic effect used in this Regulation is 'SVM' (stroboscopic visibility measure), as defined in standards. SVM = 1 represents the visibility threshold for an average observer;

(41) 'R9' means the colour rendering index for a red coloured object as defined in standards;

- (42) 'declared value' for a parameter means the value given by the supplier in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369;
- (43) 'luminous intensity' (candela or cd) means the quotient of the luminous flux leaving the source and propagated in the element of solid angle containing a given direction, by the element of solid angle;
- (44) 'correlated colour temperature' (CCT [K]) means the temperature of a Planckian (black body) radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions;
- (45) 'colour consistency' means the maximum deviation of the initial (after a short period of time), spatially averaged chromaticity coordinates (x and y) of a single light source from the chromaticity centre point (cx and cy) declared by the manufacturer or the importer, expressed as the size (in steps) of the MacAdam ellipse formed around the chromaticity centre point (cx and cy);
- (46) 'displacement factor ( $\cos \varphi 1$ )' means the cosine of the phase angle  $\varphi 1$  between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology. The displacement factor is measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer's instructions;
- (47) 'lumen maintenance factor' (X<sub>LMF</sub>) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux;
- (48) 'survival factor' (SF) means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency;
- (49) 'lifetime' for LED and OLED light sources means the time in hours between the start of their use and the moment when for 50 % of a population of light sources the light output has gradually degraded to a value below 70 % of the initial luminous flux. This is also referred to as the  $L_{70}B_{50}$  lifetime;
- (50) 'display mechanism' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- (51) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (52) 'nested display' means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (53) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in nongraphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications;
- (54) 'projected light-emitting surface area' (A) is the surface area in mm<sup>2</sup> (square millimetres) of the view in an orthographic projection of the light-emitting surface from the direction with the highest light intensity, where the lightemitting surface area is the surface area of the light source that emits light with the declared optical characteristics, such as the approximately spherical surface of an arc (a), cylindrical surface of a filament coil (b) or a gas discharge lamp (c, d), flat or semi-spherical envelope of a light-emitting diode (e).

For light sources with a non-clear envelope or with anti-glare shield, the light-emitting surface area is the entire area through which light leaves the light source.

For light sources containing more than one light emitter, the projection of the smallest gross volume enveloping all emitters shall be taken as the light-emitting surface.

For HID light sources definition (a) applies, unless the dimensions defined in (d) apply with L>D, where L is the distance between the electrode tips and D the inner diameter of the arc tube.



(55) 'quick response' (QR) code means a matrix barcode included on the energy label of a product model that links to that model's information in the public part of the product database.

## ANNEX II

## Energy efficiency classes and calculation method

The energy efficiency class of light sources shall be determined as set out in Table 1, on the basis of the total mains efficacy  $\eta_{TM}$ , which is calculated by dividing the declared useful luminous flux  $\Phi_{use}$  (expressed in *lm*) by the declared on-mode power consumption  $P_{on}$  (expressed in *W*) and multiplying by the applicable factor  $F_{TM}$  of Table 2, as follows:

 $\eta_{TM} = (\Phi_{use}/P_{on}) \times F_{TM} (lm/W).$ 

Table 1

## Energy efficiency classes of light sources

| Energy efficiency class | Total mains efficacy $\eta_{TM}$ (lm/W) |
|-------------------------|-----------------------------------------|
| А                       | $210 \le \eta_{TM}$                     |
| В                       | 185 ≤ η <sub>™</sub> < 210              |
| С                       | $160 \le \eta_{\rm TM} \le 185$         |
| D                       | 135 ≤ η <sub>™</sub> < 160              |
| Е                       | $110 \le \eta_{\rm TM} \le 135$         |
| F                       | $85 \le \eta_{TM} \le 110$              |
| G                       | η <sub>TM</sub> < 85                    |

Table 2

## Factors $F_{TM}$ by light source type

| Light source type                                    | Factor F <sub>TM</sub> |
|------------------------------------------------------|------------------------|
| Non-directional (NDLS) operating on mains (MLS)      | 1,000                  |
| Non-directional (NDLS) not operating on mains (NMLS) | 0,926                  |
| Directional (DLS) operating on mains (MLS)           | 1,176                  |
| Directional (DLS) not operating on mains (NMLS)      | 1,089                  |

#### ANNEX III

#### Label for light sources

1. LABEL

If the light source is intended to be marketed through a point of sale, a label produced in the format and containing information as set out in this Annex is printed on the individual packaging.

Suppliers shall choose a label format between point 1.1 and point 1.2 of this Annex.

The label shall be:

- for the standard-sized label at least 36 mm wide and 75 mm high;

- for the small-sized label (width less than 36 mm) at least 20 mm wide and 54 mm high.

The packaging shall not be smaller than 20 mm wide and 54 mm high.

Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above. The small-sized label shall not be used on packaging with a width of 36 mm or more.

The label and the arrow indicating the energy efficiency class may be printed in monochrome as specified in points 1.1 and 1.2, only if all other information, including graphics, on the packaging is printed in monochrome.

If the label is not printed on the part of the packaging meant to face the prospective customer, an arrow containing the letter of the energy efficiency class shall be displayed as hereafter, with the colour of the arrow matching the letter and the colour of the energy class. The size shall be such that the label is clearly visible and legible. The letter in the energy efficiency class arrow shall be Calibri Bold and positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the efficiency class.

Figure 1

#### Coloured/monochrome left/right arrow for the part of the packaging facing the prospective customer



In the case referred to in point (e) of Article 4 the rescaled label shall have a format and size that permits it to cover and adhere to the old label.

1.1. Standard-sized label:

The label shall be:



1.2. Small-sized label:

The label shall be:





- 1.3. The following information shall be included in the label for light sources:
  - I. supplier's name or trade mark;
  - II. supplier's model identifier;
  - III. scale of energy efficiency classes from A to G;
  - IV. the energy consumption, expressed in kWh of electricity consumption per 1 000 hours, of the light source in on-mode;
  - V. QR-code;
  - VI. the energy efficiency class in accordance with Annex II;
  - VII. the number of this Regulation that is '2019/2015'.
- 2. LABEL DESIGNS
- 2.1. Standard-sized label:



## 2.2. Small-sized label:



## 2.3. Whereby:

- (a) The dimensions and specifications of the elements constituting the labels shall be as indicated in paragraph 1 of Annex III and in the label designs for standard-sized and small sized labels for light sources.
- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.
- (d) Colours shall be CMYK cyan, magenta, yellow and black, following this example: 0-70-100-0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.
- (e) The labels shall fulfil all the following requirements (numbers refer to the figures above):
  - the colours of the EU logo shall be as follows:
    - the background: 100,80,0,0;
    - the stars: 0,0,100,0;

- 2 the colour of the energy logo shall be: 100,80,0,0;
- ❸ the supplier's name shall be 100 % black and in Verdana Bold 8 pt − 5 pt (standard-sized small-sized label);
- the model identifier shall be 100 % black and in Verdana Regular 8 pt 5 pt (standard-sized small-sized label);
- **5** the A to G scale shall be as follows:
  - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 10,5 pt 7 pt (standard-sized – small-sized label); the letters shall be centred on an axis at 2 mm - 1,5 mm (standard-sized – small-sized label) from the left side of the arrows;
  - the colours of A to G scale arrows shall be as follows:
    - A-class: 100,0,100,0;
    - B-class: 70,0,100,0;
    - C-class: 30,0,100,0;
    - D-class: 0,0,100,0;
    - E-class: 0,30,100,0;
    - F-class: 0,70,100,0;
    - G-class: 0,100,100,0;
- 6 the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
- the letter of the energy efficiency class shall be 100 % white and in Calibri Bold 16 pt 10 pt (standard-sized small-sized label). The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;
- It he energy consumption value shall be in Verdana Bold 12 pt; 'kWh/1 000h' shall be in Verdana Regular 8 pt 5 pt (standard-sized small-sized label), 100 % black;
- 9 the QR code shall be 100 % black;
- the number of the regulation shall be 100 % black and in Verdana Regular 5 pt.

#### ANNEX IV

#### Exemptions

- 1. This Regulation shall not apply to light sources specifically tested and approved to operate:
  - (a) in radiological and nuclear medicine installations, as defined in Article 3 of Council Directive 2009/71/Euratom (1);
  - (b) for emergency use;
  - (c) in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft as set out in Member States' regulations or in documents issued by the European Defence Agency;
  - (d) in or on motor vehicles, their trailers and systems, interchangeable towed equipment, components and separate technical units, as set out in Regulation (EC) No 661/2009 of the European Parliament and of the Council (<sup>2</sup>), Regulation (EU) No 167/2013 of the European Parliament and of the Council (<sup>3</sup>) and Regulation (EU) No 168/2013 of the European Parliament and of the Council (<sup>4</sup>);
  - (e) in or on non-road mobile machinery as set out in Regulation (EU) 2016/1628 of the European Parliament and of the Council (<sup>5</sup>) and in or on their trailers;
  - (f) in or on interchangeable equipment as set out in Directive 2006/42/EC of the European Parliament and of the Council (<sup>6</sup>) intended to be towed or to be mounted and fully raised from the ground or that cannot articulate around a vertical axis when the vehicle to which it is attached is in use on a road by vehicles as set out in Regulation (EU) No 167/2013;
  - (g) in or on civil aviation aircraft as set out in Commission Regulation (EU) No 748/2012 (<sup>7</sup>);
  - (h) in railway vehicle lighting as set out in Directive 2008/57/EC of the European Parliament and of the Council (8);
  - (i) in marine equipment as set out in Directive 2014/90/EU of the European Parliament and of the Council (°);

<sup>(1)</sup> Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations (OJ L 172, 2.7.2009, p. 18).

<sup>(2)</sup> Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor (OJ L 200, 31.7.2009, p. 1).

 <sup>(</sup>b) L200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 51, 1200, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5100, 5

<sup>(\*)</sup> Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles (OJ L 60, 2.3.2013, p. 52).

<sup>(5)</sup> Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC (OJ L 252, 16.9.2016, p. 53).

<sup>(&</sup>lt;sup>6</sup>) Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (OJ L 157, 9.6.2006, p. 24).

<sup>(&</sup>lt;sup>7</sup>) Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1).

<sup>(\*)</sup> Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast) (OJ L 191, 18.7.2008, p. 1).

<sup>(\*)</sup> Directive 2014/90/EU of the European Parliament and of the Council of 23 July 2014 on marine equipment and repealing Council Directive 96/98/EC (OJ L 257, 28.8.2014, p. 146).

(j) in medical devices as set out in Council Directive 93/42/EEC (<sup>10</sup>) or Regulation (EU) 2017/745 of the European Parliament and of the Council (<sup>11</sup>) and in vitro medical devices as set out in Directive 98/79/EC of the European Parliament and of the Council (<sup>12</sup>).

For the purpose of this point, 'specifically tested and approved' means that the light source:

- has been specifically tested for the mentioned operating condition or application, according to the European legislation mentioned or related implementing measures, or relevant European or international standards or, in the absence of these, according to relevant Member States legislation; and
- is accompanied by evidence, to be included in the technical documentation, in the form of a certificate, a type approval mark, a test report, that the product has been specifically approved for the mentioned operating condition or application; and
- is placed on the market specifically for the mentioned operating condition or application, as evidenced at least by the technical documentation, and except for point (d), information on the packaging and any advertising or marketing materials.
- 2. In addition, this Regulation shall not apply to:
  - (a) electronic displays (e.g. televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including but not limited to displays within the scope of Commission Regulation (EU) 2019/2021 (<sup>13</sup>) and of Commission Regulation (EU) No 617/2013 (<sup>14</sup>);
  - (b) light sources in range hoods within the scope of Commission Delegated Regulation (EU) No 65/2014 (<sup>15</sup>);
  - (c) light sources in battery-operated products, including but not limited to e.g. torches, mobile phones with an integrated torch light, toys including light sources, desk lamps operating only on batteries, armband lamps for cyclists, solar-powered garden lamps;
  - (d) light sources on bicycles and other non-motorised vehicles;
  - (e) light sources for spectroscopy and photometric applications, such as for example UV-VIS spectroscopy, molecular spectroscopy, atomic absorption spectroscopy, nondispersive infrared (NDIR), fourier-transform infrared (FTIR), medical analysis, ellipsometry, layer thickness measurement, process monitoring or environmental monitoring.
- 3. Any light source within the scope of this Delegated Regulation shall be exempt from the requirements of this Regulation, with the exception of the requirements set out in point 4 of Annex V, if it is specifically designed and marketed for its intended use in at least one of the following applications:
  - (a) signalling (including, but not limited to, road-, railway-, marine- or air traffic- signalling, traffic control or air-field lamps);
  - (b) image capture and image projection (including, but not limited to, photocopying, printing (directly or in preprocessing), lithography, film and video projection, holography);
  - (c) light sources with specific effective ultraviolet power > 2 mW/klm and intended for use in applications requiring high UV-content;

(<sup>11</sup>) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).
(<sup>12</sup>) Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices

<sup>(&</sup>lt;sup>10</sup>) Council Directive 93/42/EEC of 14 June 1993 concerning medical devices (OJ L 169, 12.7.1993, p. 1).

<sup>(12)</sup> Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices (OJ L 331, 7.12.1998, p. 1).

<sup>(&</sup>lt;sup>13</sup>) Commission Regulation (EU) 2019/2021 of 1 October 2019 laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) 642/2009 (see page 241 of this Official Journal).

<sup>(14)</sup> Commission Regulation (EU) No 617/2013 of 26 June 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers (OJ L 175, 27.6.2013, p. 13).

<sup>(&</sup>lt;sup>15</sup>) Commission Delegated Regulation (EU) No 65/2014 of 1 October 2013 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to the energy labelling of domestic ovens and range hoods (OJ L 29, 31.1.2014, p. 1).

- (d) light sources with a peak radiation around 253,7 nm and intended for germicidal use (destruction of DNA);
- (e) light sources emitting 5 % or more of total radiation power of the range 250-800 nm in the range of 250-315 nm and/or 20 % or more of total radiation power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping;
- (f) light sources having the primary purpose to emit radiation around 185,1 nm and intended to be used for the generation of ozone;
- (g) light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 400-480 nm, and intended for coral zooxanthellae symbioses;
- (h) FL light sources emitting 80% or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;
- (i) HID light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;
- (j) light sources with a photosynthetic efficacy > 1,2  $\mu$ mol/J, and/or emitting 25% or more of total radiation power of the range 250-800 nm in the range of 700-800 nm, and intended for use in horticulture;
- (k) LED or OLED light sources, complying with the definition of 'original works of art' as defined in Directive 2001/84/EC of the European Parliament and of the Council (<sup>16</sup>), made by the artist him/herself in a limited number below 10 pieces.

<sup>(&</sup>lt;sup>16</sup>) Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art (OJ L 272, 13.10.2001, p. 32).

## ANNEX V

## **Product information**

#### 1. **Product information sheet**

1.1. Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 3, including when the light source is a part in a containing product.

## Table 3

## Product information sheet

## Supplier's name or trade mark:

Supplier's address (a):

Model identifier:

## Type of light source:

| Lighting technology used:     | [HL/LFL T5 HE/LFL<br>T5 HO/CFLni/other<br>FL/HPS/MH/other<br>HID/LED/OLED/<br>mixed/other] | Non-directional or<br>directional: | [NDLS/DLS]                             |
|-------------------------------|--------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------|
| Mains or non-mains:           | [MLS/NMLS]                                                                                 | Connected light source (CLS):      | [yes/no]                               |
| Colour-tuneable light source: | [yes/no]                                                                                   | Envelope:                          | [no/second/non-clear]                  |
| High luminance light source:  | [yes/no]                                                                                   |                                    |                                        |
| Anti-glare shield:            | [yes/no]                                                                                   | Dimmable:                          | [yes/only with specific<br>dimmers/no] |

## **Product parameters**

| Parameter | Value | Parameter | Value |
|-----------|-------|-----------|-------|
|           |       |           |       |

## General product parameters:

| Energy consumption in on-mode (kWh/<br>1 000 h)                                                                                                | X                                      | Energy efficiency<br>class                                                                                                                                                             | [A/B/C/D/E/F/G] ( <sup>b</sup> ) |
|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Useful luminous flux ( $\Phi_{use}$ ), indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°) | x in [sphere/wide<br>cone/narrow cone] | Correlated colour<br>temperature,<br>rounded to the near-<br>est 100 K, or the<br>range of correlated<br>colour temperatures,<br>rounded to the near-<br>est 100 K, that can<br>be set | [x/xx]                           |

| On-mode power (P <sub>on</sub> ),                                                                                                              | expressed in W                                          | x,x     | Standby power (P <sub>sb</sub> ),<br>expressed in W and<br>rounded to the sec-<br>ond decimal                   | x,xx           |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------|----------------|
| Networked standby por<br>expressed in W and roo<br>decimal                                                                                     | wer (P <sub>net</sub> ) for CLS,<br>unded to the second | x,xx    | Colour rendering<br>index, rounded to<br>the nearest integer,<br>or the range of CRI-<br>values that can be set | [x/xx]         |
| Outer dimensions<br>without separate con-<br>trol gear, lighting con-<br>trol parts and non-<br>lighting control parts,<br>if any (millimetre) | Height                                                  | X       | Spectral power distri-<br>bution in the range<br>250 nm to 800 nm,<br>at full-load                              | [graphic]      |
|                                                                                                                                                | Width                                                   | X       |                                                                                                                 |                |
|                                                                                                                                                | Depth                                                   | X       |                                                                                                                 |                |
| Claim of equivalent po                                                                                                                         | wer (°)                                                 | [yes/-] | If yes, equivalent<br>power (W)                                                                                 | x              |
|                                                                                                                                                |                                                         |         | Chromaticity coordi-<br>nates (x and y)                                                                         | 0,xxx<br>0,xxx |

## Parameters for directional light sources:

| Peak luminous intensity (cd) | x | Beam angle in<br>degrees, or the range<br>of beam angles that<br>can be set | [x/xx] |
|------------------------------|---|-----------------------------------------------------------------------------|--------|
|                              |   | can be set                                                                  |        |

# Parameters for LED and OLED light sources:

| R9 colour rendering index value | X    | Survival factor | X,XX |
|---------------------------------|------|-----------------|------|
| the lumen maintenance factor    | X,XX |                 |      |

# Parameters for LED and OLED mains light sources:

| displacement factor (cos φ1) | X,XX | Colour consistency<br>in McAdam ellipses | x |
|------------------------------|------|------------------------------------------|---|
|------------------------------|------|------------------------------------------|---|

| Claims that an LED light source replaces<br>a fluorescent light source without integrated<br>ballast of a particular wattage. | [yes/-] ( <sup>d</sup> ) | If yes then replace-<br>ment claim (W) | x   |
|-------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------|-----|
| Flicker metric (Pst LM)                                                                                                       | X,X                      | Stroboscopic effect<br>metric (SVM)    | x,x |

(a) changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369.

(\*) if the product database automatically generates the definitive content of this cell the supplier shall not enter these data. (\*) '-': not applicable;

'yes': An equivalence claim involving the power of a replaced light source type may be given only:

- for directional light sources, if the light source type is listed in Table 4 and if the luminous flux of the light source in a 90 ° cone ( $\Phi_{90^\circ}$ ) is not lower than the corresponding reference luminous flux in Table 4. The reference luminous flux shall be multiplied by the correction factor in Table 5. For LED light sources, it shall be in addition multiplied by the correction factor in Table 5.

 for non-directional light sources, the claimed equivalent incandescent light source power (rounded to 1 W) shall be that corresponding in Table 7 to the luminous flux of the light source.

The intermediate values of both the luminous flux and the claimed equivalent light source power (rounded to the nearest 1 W) shall be calculated by linear interpolation between the two adjacent values.

#### (<sup>d</sup>) '-': not applicable;

'yes': Claim that a LED light source replaces a fluorescent light source without integrated ballast of a particular wattage. This claim may be made only if:

- the luminous intensity in any direction around the tube axis does not deviate by more than 25 % from the average luminous intensity around the tube; and
- the luminous flux of the LED light source is not lower than the luminous flux of the fluorescent light source of the claimed wattage. The luminous flux of the fluorescent light source shall be obtained by multiplying the claimed wattage with the minimum luminous efficacy value corresponding to the fluorescent light source in Table 8; and

— the wattage of the LED light source is not higher than the wattage of the fluorescent light source it is claimed to replace. The technical documentation file shall provide the data to support such claims.

| Extra-low voltage reflector type |           |                                    |  |
|----------------------------------|-----------|------------------------------------|--|
| Туре                             | Power (W) | Reference $\Phi_{90^{\circ}}$ (lm) |  |
| MR11 GU4                         | 20        | 160                                |  |
|                                  | 35        | 300                                |  |
| MR16 GU 5.3                      | 20        | 180                                |  |
|                                  | 35        | 300                                |  |
|                                  | 50        | 540                                |  |
| AR111                            | 35        | 250                                |  |
|                                  | 50        | 390                                |  |
|                                  | 75        | 640                                |  |
|                                  | 100       | 785                                |  |

# Reference luminous flux for equivalence claims

Table 4

|          | Mains-voltage blown glass reflector type  |                                    |
|----------|-------------------------------------------|------------------------------------|
| Туре     | Power (W)                                 | Reference $\Phi_{90^{\circ}}$ (lm) |
| R50/NR50 | 25                                        | 90                                 |
|          | 40                                        | 170                                |
| R63/NR63 | 40                                        | 180                                |
|          | 60                                        | 300                                |
| R80/NR80 | 60                                        | 300                                |
|          | 75                                        | 350                                |
|          | 100                                       | 580                                |
| R95/NR95 | 75                                        | 350                                |
|          | 100                                       | 540                                |
| R125     | 100                                       | 580                                |
|          | 150                                       | 1 000                              |
|          | Mains-voltage pressed glass reflector typ | e                                  |
| Туре     | Power (W)                                 | Reference $\Phi_{90^\circ}$ (lm)   |
| PAR16    | 20                                        | 90                                 |
|          | 25                                        | 125                                |
|          | 35                                        | 200                                |
|          | 50                                        | 300                                |
| PAR20    | 35                                        | 200                                |
|          | 50                                        | 300                                |
|          | 75                                        | 500                                |
| PAR25    | 50                                        | 350                                |
|          | 75                                        | 550                                |
| PAR30S   | 50                                        | 350                                |
|          | 75                                        | 550                                |
|          | 100                                       | 750                                |
| PAR36    | 50                                        | 350                                |
|          | 75                                        | 550                                |
|          | 100                                       | 720                                |
| PAR38    | 60                                        | 400                                |
|          | 75                                        | 555                                |
|          | 80                                        | 600                                |
|          | 100                                       | 760                                |
|          | 120                                       | 900                                |

|                | Tai     | ble 5 | 5     |           |     |
|----------------|---------|-------|-------|-----------|-----|
| Multiplication | factors | for   | lumen | maintenan | ice |

| Light source type         | Luminous flux multiplication factor                                                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------|
| Halogen light sources     | 1                                                                                                         |
| Fluorescent light sources | 1,08                                                                                                      |
| LED light sources         | 1 + 0,5 × (1 - LLMF)<br>where LLMF is the lumen maintenance factor at the end<br>of the declared lifetime |

## Table 6

## Multiplication factors for LED light sources

| LED light source beam angle | Luminous flux multiplication factor |
|-----------------------------|-------------------------------------|
| 20° ≤ beam angle            | 1                                   |
| 15° ≤ beam angle < 20°      | 0,9                                 |
| 10° ≤ beam angle < 15°      | 0,85                                |
| beam angle < 10°            | 0,80                                |

Table 7

# Equivalence claims for non-directional light sources

| Rated light source luminous flux $\Phi$ (lm) | Claimed equivalent incandescent light source power (W) |
|----------------------------------------------|--------------------------------------------------------|
| 136                                          | 15                                                     |
| 249                                          | 25                                                     |
| 470                                          | 40                                                     |
| 806                                          | 60                                                     |
| 1 055                                        | 75                                                     |
| 1 521                                        | 100                                                    |
| 2 452                                        | 150                                                    |
| 3 452                                        | 200                                                    |

| T8 (26                          | mm Ø)                               | T5 (16 mm Ø)<br>High Efficiency |                                     | T5 (16 mm Ø)<br>High Output     |                                          |
|---------------------------------|-------------------------------------|---------------------------------|-------------------------------------|---------------------------------|------------------------------------------|
| Claimed equivalent<br>power (W) | Minimum luminous<br>efficacy (lm/W) | Claimed equivalent<br>power (W) | Minimum luminous<br>efficacy (lm/W) | Claimed equivalent<br>power (W) | Minimum lumi-<br>nous efficacy<br>(lm/W) |
| 15                              | 63                                  | 14                              | 86                                  | 24                              | 73                                       |
| 18                              | 75                                  | 21                              | 90                                  | 39                              | 79                                       |
| 25                              | 76                                  | 28                              | 93                                  | 49                              | 88                                       |
| 30                              | 80                                  | 35                              | 94                                  | 54                              | 82                                       |
| 36                              | 93                                  |                                 |                                     | 80                              | 77                                       |
| 38                              | 87                                  |                                 |                                     |                                 |                                          |
| 58                              | 90                                  |                                 |                                     |                                 |                                          |
| 70                              | 89                                  |                                 |                                     |                                 |                                          |

Table 8Minimum efficacy values for T8 and T5 light sources

For light sources that can be tuned to emit light at full-load with different characteristics, the values of parameters that vary with these characteristics shall be reported at the reference control settings.

If the light source is no longer placed on the EU market, the supplier shall put in the product database the date (month, year) when the placing on the EU market stopped.

## 2. Information to be displayed in the documentation for a containing product

If a light source is placed on the market as a part in a containing product, the technical documentation for the containing product shall clearly identify the contained light source(s), including the energy efficiency class.

If a light source is placed on the market as a part in a containing product, the following text shall be displayed, clearly legible, in the user manual or booklet of instructions:

'This product contains a light source of energy efficiency class <X>',

where <X> shall be replaced by the energy efficiency class of the contained light source.

If the product contains more than one light source, the sentence can be in the plural, or repeated per light source, as suitable.

## 3. Information to be displayed on the supplier's free access website:

(a) The reference control settings, and instructions on how they can be implemented, where applicable;

- (b) Instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimize their power consumption;
- (c) If the light source is dimmable: a list of dimmers it is compatible with, and the light source dimmer compatibility standard(s) it is compliant with, if any;
- (d) If the light source contains mercury: instructions on how to clean up the debris in case of accidental breakage;
- (e) Recommendations on how to dispose of the light source at the end of its life in line with Directive 2012/19/EU of the European Parliament and of the Council (1).

## 4. Information for products specified in point 3 of Annex IV

For the light sources specified in point 3 of Annex IV, their intended use shall be stated on all forms of packaging, product information and advertisement, together with a clear indication that the light source is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment, in accordance with paragraph 3 of Article 3 of Regulation (EU) 2017/1369 shall list the technical parameters that make the product design specific to qualify for the exemption.

<sup>(1)</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38).

### ANNEX VI

#### **Technical documentation**

- 1. The technical documentation referred to in point 1(d) of Article 3 shall include:
  - (a) the name and address of the supplier;
  - (b) supplier's model identifier;
  - (c) the model identifier of all equivalent models already placed on the market;
  - (d) identification and signature of the person empowered to bind the supplier;
  - (e) the declared and measured values for the following technical parameters:
    - (1) useful luminous flux ( $\Phi_{use}$ ) in lm;
    - (2) colour rendering index (CRI);
    - (3) on-mode power (Pon) in W;
    - (4) beam angle in degrees for directional light sources (DLS);
    - (5) correlated colour temperature (CCT) in K for FL and HID light sources;
    - (6) 'standby power  $(P_{sb})$  in W, including when it is zero;
    - (7) networked standby power (Pnet) in W for connected light sources (CLS);
    - (8) displacement factor (cos  $\varphi$ 1) for LED and OLED mains light sources;
    - (9) colour consistency in MacAdam ellipse steps for LED and OLED light sources;
    - (10) luminance-HLLS in cd/mm<sup>2</sup> (only for HLLS)
    - (11) flicker metric (PstLM) for LED and OLED light sources;
    - (12) stroboscopic effect metric (SVM) for LED and OLED light sources;
    - (13) excitation purity, only for CTLS, for the following colours and dominant wavelength within the given range:
      - Colour Dominant wave-length range
      - Blue 440 nm 490 nm
      - Green 520 nm 570 nm
      - Red 610 nm 670 nm
  - (f) the calculations performed with the parameters, including the determination of the energy efficiency class;
  - (g) references to the harmonised standards applied or other standards used;
  - (h) testing conditions if not described sufficiently in point (g);
  - (i) the reference control settings, and instructions on how they can be implemented, where applicable;
  - (j) instructions on how to remove lighting control parts and/or non-lighting parts, if any, or how to switch them off or minimise their power consumption during light source testing;
  - (k) specific precautions that shall be taken when the model is assembled, installed, maintained or tested.

#### ANNEX VII

# Information to be provided in visual advertisements, in technical promotional material and in distance selling, except distance selling on the internet

- 1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in point 1(e) of Article 3 and point 1(c) of Article 4, the energy class and the range of efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 2. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in point 1(f) of Article 3 and point 1(d) of Article 4, the energy class and the range of efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 3. Any paper-based distance selling must show the energy class and the range of efficiency classes available on the label as set out in point 4 of this Annex.
- 4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 2, with:
  - (a) an arrow, containing the letter of the energy efficiency class in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
  - (b) the colour of the arrow matching the colour of the energy efficiency class;
  - (c) the range of available energy efficiency classes in 100 % black; and,
  - (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

#### Figure 2

Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



- 5. Telemarketing-based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the full label and the product information sheet through a free access website, or by requesting a printed copy.
- 6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to access the label and the product information sheet through a link to the product database website, or to request a printed copy.

## ANNEX VIII

### Information to be provided in the case of distance selling on the internet

1. The appropriate label made available by suppliers in accordance with point 1(g) Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified for the standard label in Annex III.

The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.

- 2. The image used for accessing the label in the case of nested display, as indicated in Figure 3, shall:
  - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
  - (b) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;
  - (c) have the range of available energy efficiency classes in 100 % black; and,
  - (d) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

#### Figure 3

## Coloured left/right arrow, with range of energy efficiency classes indicated



- 3. In the case of nested display, the sequence of display of the label shall be as follows:
  - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
  - (b) the image shall link to the label set out in Annex III;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard-closing mechanism;
  - (g) the alternative text for the graphic, to be displayed upon failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
- 4. The appropriate product information sheet made available by suppliers in accordance with point 1(h) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

#### ANNEX IX

#### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities. These tolerances shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or on the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

When verifying the compliance of a product model with the requirements laid down in this Delegated Regulation, the authorities of the Member States shall apply the following procedure:

1. The Member State authorities shall verify one single unit of the model for points 2(a) and 2(b) of this Annex.

The Member State authorities shall verify 10 units of the light source model for point 2(c) of this Annex. The verification tolerances are laid down in Table 6 of this Annex.

- 2. The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 3 of Article 3 of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
  - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and
  - (c) when the Member State authorities test the units of the model, the determined values comply with the respective verification tolerances as given in Table 9, where 'determined value' means the arithmetical mean over the tested units of the measured values for a given parameter or the arithmetical mean of parameter values calculated from other measured values.
- 3. If the results referred to in point 2(a), (b) or (c) are not achieved, the model and all models that have been listed as equivalent models in the supplier's technical documentation shall be considered not to comply with this Regulation.
- 4. The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision is taken on the non-compliance of the model in accordance with point 3 of this Annex.

The Member State authorities shall only apply the verification tolerances that are set out in Table 9 and shall use only the procedure described in this Annex. For the parameters in Table 9, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

| Parameter                        | Sample size | Verification tolerances                                                       |
|----------------------------------|-------------|-------------------------------------------------------------------------------|
| Full-load on-mode power Pon [W]: |             |                                                                               |
| $P_{on} \leq 2W$                 | 10          | The determined value shall not exceed the declared value by more than 0,20 W. |
| $2W < P_{on} \le 5W$             | 10          | The determined value shall not exceed the declared value by more than 10 %.   |

## Table 9

#### Verification tolerances

L 315/100

| Parameter                                                                         | Sample size | Verification tolerances                                                                                                                                                                       |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $5W < P_{on} \le 25W$                                                             | 10          | The determined value shall not exceed the declared value by more than 5 %.                                                                                                                    |
| $25W < P_{on} \le 100W$                                                           | 10          | The determined value shall not exceed the declared value by more than 5 %.                                                                                                                    |
| 100W < P <sub>on</sub>                                                            | 10          | The determined value shall not exceed the declared value by more than 2,5 %.                                                                                                                  |
| Displacement factor [0-1]                                                         | 10          | The determined value shall not be less than the declared value minus 0,1 units.                                                                                                               |
| Useful luminous flux $\Phi_{use}$ [ <i>lm</i> ]                                   | 10          | The determined value shall not be less than the declared value minus 10 %.                                                                                                                    |
| Standby power P <sub>sb</sub> and networked standby<br>power P <sub>net</sub> [W] | 10          | The determined value shall not exceed the declared value by more than 0,10 W.                                                                                                                 |
| CRI and R9 [0-100]                                                                | 10          | The determined value shall not be less than the declared value by more than 2,0 units.                                                                                                        |
| Flicker [Pst LM] and stroboscopic effect<br>[SVM]                                 | 10          | The determined value shall not exceed the declared value by more than 10 %.                                                                                                                   |
| Colour consistency [MacAdam ellips steps]                                         | 10          | The determined number of steps shall not exceed the declared number of steps. The centre of the MacAdam ellipse shall be the centre declared by the supplier with a tolerance of 0,005 units. |
| Beam angle ( <i>degrees</i> )                                                     | 10          | The determined value shall not deviate from the declared value by more than 25 %.                                                                                                             |
| Total mains efficacy $\eta_{TM}$ [lm/W]                                           | 10          | The determined value (quotient) shall not be less than the declared value minus 5 %.                                                                                                          |
| Lumen maintenance factor (for LED and OLED)                                       | 10          | The determined $X_{LMF}$ % of the sample shall not be less than $X_{LMF}$ , $_{MIN}$ % according to the text in Annex V of Commission Regulation (EU) 2019/2020 ( <sup>1</sup> ).             |
| Survival factor (for LED and OLED)                                                | 10          | At least 9 light sources of the test sample must be opera-<br>tional after completing the endurance test in Annex V of<br>Regulation (EU) 2019/2020.                                          |
| Lumen maintenance factor (for FL and HID)                                         | 10          | The determined value shall not be less than 90 % of the declared value.                                                                                                                       |

| Parameter                         | Sample size | Verification tolerances                                                           |
|-----------------------------------|-------------|-----------------------------------------------------------------------------------|
| Survival factor (for FL and HID)  | 10          | The determined value shall not be less than the declared value.                   |
| Excitation purity [%]             | 10          | The determined value shall not be less than the declared value minus 5 %.         |
| Correlated colour temperature [K] | 10          | The determined value shall not deviate from the declared value by more than 10 %. |
| Luminous peak intensity [cd]      | 10          | The determined value shall not deviate from the declared value by more than 25 %. |

(<sup>1</sup>) Commission Regulation (EU) 2019/2020 of 1 October 2019 laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012 (see page 209 of this Official Journal).

For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing of market surveillance authorities shall consider a length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source supplier shall indicate which control gear is suitable for this length.

When verifying if a product is a light source, market surveillance authorities shall compare the measured values for chromaticity coordinates (x and y), luminous flux, luminous flux density, and colour rendering index directly with the limit values set out in the definition for light source of Article 2 of this Regulation, without applying any tolerances. If any of the 10 units in the sample satisfies the conditions for being a light source, the product model shall be considered to be a light source.

Light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light shall be evaluated using the reference control settings.

#### COMMISSION DELEGATED REGULATION (EU) 2019/2016

#### of 11 March 2019

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances and repealing Commission Delegated Regulation (EU) No 1060/2010

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive  $2010/30/EU(^1)$ , and in particular Article 11(5) and Article 16(1) thereof,

Whereas:

- (1) Regulation (EU) 2017/1369 empowers the Commission to adopt delegated acts as regards the labelling or rescaling of the labelling of product groups representing significant potential for energy savings and, where relevant, other resources.
- (2) Provisions on the energy labelling of household refrigerating appliances were established by Commission Delegated Regulation (EU) No 1060/2010 (<sup>2</sup>).
- (3) The Communication from the Commission COM(2016) 773 (<sup>3</sup>) (ecodesign working plan) established by the Commission in application of Article 16(1) of Directive 2009/125/EC of the European Parliament and of the Council (<sup>4</sup>) sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Commission Regulation (EC) No 643/2009 (<sup>5</sup>) and Delegated Regulation (EU) No 1060/2010.
- (4) Measures from the ecodesign working plan have an estimated potential to deliver in total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Refrigerating appliances is one of the product groups listed in the ecodesign working plan, with an estimated 10 TWh of annual final energy savings in 2030.
- (5) Household refrigerating appliances are among the product groups mentioned in Article 11(5)(b) of Regulation (EU) 2017/1369 for which the Commission should adopt a delegated act introducing an A to G rescaled label.
- (6) Delegated Regulation (EU) No 1060/2010 requires the Commission to review the Regulation on a regular basis in light of technological progress.
- (7) The Commission has reviewed Delegated Regulation (EU) No 1060/2010 as required by its Article 7 and analysed the technical, environmental and economic aspects of refrigerating appliances as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 14 of Regulation (EU) 2017/1369.
- (8) The review concluded that there was a need to introduce revised energy labelling requirements for refrigerating appliances.

<sup>&</sup>lt;sup>(1)</sup> OJ L 198, 28.7.2017, p. 1.

<sup>(&</sup>lt;sup>2</sup>) Commission Delegated Regulation (EU) No 1060/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household refrigerating appliances (OJ L 314, 30.11.2010, p. 17).

<sup>(&</sup>lt;sup>3</sup>) Communication from the Commission. Ecodesign working plan 2016-2019 COM(2016) 773 final, 30.11.2016.

<sup>(\*)</sup> Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10).

<sup>(5)</sup> Commission Regulation (EC) No 643/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for household refrigerating appliances (OJ L 191, 23.7.2009, p. 53).

- (9) The review concluded that the electricity use of products subject to this Regulation can be further significantly reduced by implementing energy label measures focusing on refrigerating appliances.
- (10) Refrigerating appliances with a direct sales function should be subject to a separate energy labelling regulation.
- (11) Chest freezers, including professional chest freezers, should be in the scope of this Regulation, as they are out of the scope of the Commission Delegated Regulation (EU) 2015/1094 (<sup>6</sup>) and can be used in other environments than professional environments.
- (12) Wine storage appliances and low noise refrigerating appliances (such as minibars), including those with transparent doors, do not have a direct sales function. Wine storage appliances are usually either used in household environments or in restaurants, whereas minibars are usually used in hotel rooms. Therefore, wine storage appliances and minibars, including those with transparent doors should be covered by this Regulation.
- (13) Refrigerating appliances that are displayed at trade fairs should bear the energy label if the first unit of the model has already been placed on the market or is placed on the market at the trade fair.
- (14) The electricity used by household refrigerating appliances accounts for a significant share of total household electricity demand in the Union. In addition to the energy efficiency improvements already achieved, the scope for further reducing the energy consumption of household refrigerating appliances is substantial.
- (15) The review has shown that the electricity consumption of products subject to this Regulation can be further reduced significantly by implementing energy label measures focusing on energy efficiency and annual energy consumption. In order for end-users to make an informed decision, information on airborne acoustical noise and the compartment types should also be included.
- (16) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>7</sup>).
- (17) To improve the effectiveness of this Regulation, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited.
- (18) Recognising the growth of sales of energy-related products through internet hosting platforms, rather than directly from suppliers' websites, it should be clarified that internet sales platforms should be responsible for enabling the displaying of the label provided by the supplier in proximity to the price. They should inform the supplier of that obligation, but should not be responsible for the accuracy or content of the label and the product information sheet provided. However, in application of Article 14(1)(b) of Directive 2000/31/EC of the European Parliament and of the Council (<sup>8</sup>) on electronic commerce, such internet hosting platforms should act expeditiously to remove or to disable access to information about the product in question if they are aware of the non-compliance (e.g. missing, incomplete or incorrect label or product information sheet) for example if informed by the market surveillance authority. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.
- (19) The measures provided for in this Regulation were discussed by the Consultation Forum and the Member State experts in accordance Article 14 of Regulation (EU) 2017/1369.
- (20) Delegated Regulation (EU) No 1060/2010 should therefore be repealed,

<sup>(\*)</sup> Commission Delegated Regulation (EU) 2015/1094 of 5 May 2015 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of professional refrigerated storage cabinets (OJ L 177, 8.7.2015, p. 2).

<sup>(7)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(8)</sup> Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce) (OJ L 178, 17.7.2000, p. 1).

HAS ADOPTED THIS REGULATION:

#### Article 1

#### Subject matter and scope

1. This Regulation establishes requirements for the labelling of, and the provision of supplementary product information on, electric mains-operated refrigerating appliances with a volume of more than 10 litres and of less than or equal to 1 500 litres.

- 2. This Regulation does not apply to:
- (a) professional refrigerated storage cabinets and blast cabinets, with the exception of professional chest freezers;
- (b) refrigerating appliances with a direct sales function;
- (c) mobile refrigerating appliances;
- (d) appliances where the primary function is not the storage of foodstuffs through refrigeration.

#### Article 2

#### Definitions

For the purpose of this Regulation, the following definitions shall apply:

- (1) 'mains' or 'electric mains' means the electricity supply from the grid of 230 (± 10 %) volt of alternating current at 50 Hz;
- (2) 'refrigerating appliance' means an insulated cabinet with one or more compartments that are controlled at specific temperatures, cooled by natural or forced convection whereby the cooling is obtained by one or more energy consuming means;
- (3) 'compartment' means an enclosed space within a refrigerating appliance, separated from other compartment(s) by a partition, container, or similar construction, which is directly accessible through one or more external doors and may itself be divided into sub-compartments. For the purpose of this Regulation, unless specified otherwise, compartment refers to both compartments and sub-compartments;
- (4) 'external door' is the part of a cabinet that can be moved or removed to at least allow the load to be moved from the exterior to the interior or from the interior to the exterior of the cabinet;
- (5) 'sub-compartment' means an enclosed space in a compartment having a different operating temperature range from the compartment in which it is located;
- (6) 'total volume' (V) means the volume of the space within the inside liner of the refrigerating appliance, equal to the sum of the compartment volumes, expressed in dm<sup>3</sup> or litres;
- (7) 'compartment volume' (V<sub>2</sub>) means the volume of the space within the inside liner of the compartment, expressed in dm<sup>3</sup> or litres;
- (8) 'professional refrigerated storage cabinet' means an insulated refrigerating appliance integrating one or more compartments accessible via one or more doors or drawers, capable of continuously maintaining the temperature of foodstuffs within prescribed limits at chilled or frozen operating temperature, using a vapour compression cycle, and used for the storage of foodstuffs in non-household environments but not for the display to or access by customers, as defined in Commission Regulation (EU) 2015/1095 (<sup>9</sup>);
- (9) 'blast cabinet' means an insulated refrigerating appliance primarily intended to rapidly cool hot foodstuffs to below 10 °C in the case of chilling and below 18 °C in the case of freezing, as defined in Regulation (EU) 2015/1095;

<sup>(°)</sup> Commission Regulation (EU) 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers (OJ L 177, 8.7.2015, p. 19).

- (10) 'professional chest freezer' means a freezer in which the compartment(s) is accessible from the top of the appliance or which has both top-opening type and upright type compartments but where the gross volume of the top-opening type compartment(s) exceeds 75 % of the total gross volume of the appliance, used for the storage of foodstuffs in non-household environments;
- (11) 'freezer' means a refrigerating appliance with only 4-star compartments;
- (12) 'freezer compartment' or '4-star compartment' means a frozen compartment with a target temperature and storage conditions of 18 °C and which fulfils the requirements for the freezing capacity;
- (13) 'frozen compartment' means a compartment type with a target temperature equal to or below 0 °C; that is a 0-star, 1-star, 2-star, 3-star or 4-star compartment, as set out in Annex IV, Table 3;
- (14) 'compartment type' means the declared compartment type in accordance with the refrigerating performance parameters  $T_{min}$ ,  $T_{max}$ ,  $T_c$  and others set out in Annex IV, Table 3;
- (15) 'target temperature' (T<sub>c</sub>) means the reference temperature inside a compartment during testing, as set out in Annex IV, Table 3, and is the temperature for testing energy consumption expressed as the average over time and over a set of sensors;
- (16) 'minimum temperature' ( $T_{min}$ ) means the minimum temperature inside a compartment during storage testing, as set out in Annex IV, Table 3;
- (17) 'maximum temperature' ( $T_{max}$ ) means the maximum temperature inside a compartment during storage testing, as set out in Annex IV, Table 3;
- (18) '0-star compartment' and 'ice-making compartment' means a frozen compartment with a target temperature and storage conditions of 0 °C, as set out in Annex IV, Table 3;
- (19) '1-star compartment' means a frozen compartment with a target temperature and storage conditions of 6 °C, as set out in Annex IV, Table 3;
- (20) '2-star compartment' means a frozen compartment with a target temperature and storage conditions of 12 °C, as set out in Annex IV, Table 3;
- (21) '3-star compartment' means a frozen compartment with a target temperature and storage conditions of 18 °C, as set out in Annex IV, Table 3;
- (22) 'refrigerating appliance with a direct sales function' means a refrigerating appliance used for the functions of displaying and selling items at specified temperatures below the ambient temperature to customers, accessible directly through open sides or via one or more doors, or drawers, or both, including also cabinets with areas used for storage or assisted serving of items not accessible by the customers and excluding minibars and wine storage appliances, as defined in Commission Regulation (EU) 2019/2024 (<sup>10</sup>);
- (23) 'minibar' means a refrigerating appliance with a total volume of maximum 60 litres, which is primary intended for the storage and sales of foodstuffs in hotel rooms and similar premises;
- (24) 'wine storage appliance' means a dedicated refrigerating appliance for the storage of wine, with precision temperature control for the storage conditions and target temperature of a wine storage compartment, as defined in Annex IV, Table 3, and equipped with anti-vibration measures;
- (25) 'dedicated refrigerating appliance' means a refrigerating appliance with only one type of compartment;
- (26) 'wine storage compartment' means an unfrozen compartment with a target temperature of 12 °C, an internal humidity range from 50 % to 80 % and storage conditions ranging from 5 °C to 20 °C, as defined in Annex IV, Table 3;

<sup>(&</sup>lt;sup>10</sup>) Commission Regulation (EU) 2019/2024 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances with a direct sales function pursuant to Directive 2009/125/EC of the European Parliament and of the Council (see page 313 of this Official Journal).

- (27) 'unfrozen compartment' means a compartment type with a target temperature equal to or above 4 °C; that is a pantry, wine storage, cellar or fresh food compartment with storage conditions and target temperatures, as set out in Annex IV, Table 3;
- (28) 'pantry compartment' means an unfrozen compartment with a target temperature of 17 °C and storage conditions ranging from 14 °C to 20 °C, as set out in Annex IV, Table 3;
- (29) 'cellar compartment' means an unfrozen compartment with a target temperature of 12 °C and storage conditions ranging from 2 °C to 14 °C, as set out in Annex IV, Table 3;
- (30) 'fresh food compartment' means an unfrozen compartment with a target temperature of 4 °C and storage conditions ranging from 0 °C and 8 °C, as set out in Annex IV, Table 3;
- (31) 'mobile refrigerating appliance' means a refrigerating appliance that can be used where there is no access to the mains electricity grid and that uses extra low-voltage electricity (< 120V DC) or fuel or both as the energy source for the refrigeration functionality, including a refrigerating appliance that, in addition to extra low voltage electricity or fuel, or both, can be electric mains operated. An appliance placed on the market with an AC/DC converter is not a mobile refrigerating appliance;
- (32) 'foodstuffs' means food, ingredients, beverages, including wine, and other items primarily used for consumption which require refrigeration at specified temperatures;
- (33) 'point of sale' means a location where refrigerating appliances are displayed or offered for sale, hire or hire-purchase;
- (34) 'built-in appliance' means a refrigerating appliance that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top, bottom and sides) by panels;
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;
- (35) 'energy efficiency index' (EEI) means an index number for the relative energy efficiency of a refrigeration appliance, expressed in percentage, as set out in point 5 of Annex IV.

For the purposes of the Annexes, additional definitions are set out in Annex I.

#### Article 3

## **Obligations of suppliers**

- 1. Suppliers shall ensure that:
- (a) each refrigerating appliance is supplied with a printed label in the format as set out in Annex III;
- (b) the parameters of the product information sheet, set out in Annex V, are entered into the product database;
- (c) if specifically requested by the dealer, the product information sheet shall be made available in printed form;
- (d) the content of the technical documentation, set out in Annex VI, is entered into the product database;
- (e) any visual advertisement for a specific model of refrigerating appliances contains the energy efficiency class and the range of energy efficiency classes available on the label in accordance with Annex VII and Annex VIII;
- (f) any technical promotional material concerning a specific model of refrigerating appliances, including technical promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (g) an electronic label in the format and containing the information, as set out in Annex III, is made available to dealers for each refrigerating appliance model;
- (h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each refrigerating appliance model.
- 2. The energy efficiency class shall be based on the energy efficiency index calculated in accordance with Annex II.

### Article 4

# **Obligations of dealers**

Dealers shall ensure that:

- (a) each refrigerating appliance, at the point of sale, including at trade fairs, bears the label provided by suppliers in accordance with point 1(a) of Article 3, with the label being displayed for built-in appliances in such a way as to be clearly visible, and for all other refrigerating appliances in such a way as to be clearly visible on the outside of the front or top of the refrigerating appliance;
- (b) in the event of distance selling, the label and product information sheet are provided in accordance with Annexes VII and VIII;
- (c) any visual advertisement for a specific model of refrigerating appliance, including on the internet, contains the energy efficiency class and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (d) any technical promotional material concerning a specific model of refrigerating appliance, including technical promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII.

### Article 5

### **Obligations of internet hosting platforms**

Where a hosting service provider as referred to in Article 14 of Directive 2000/31/EC allows the direct selling of refrigerating appliances through its internet site, the service provider shall enable the showing of the electronic label and electronic product information sheet provided by the dealer on the display mechanism in accordance with the provisions of Annex VIII and shall inform the dealer of the obligation to display them.

### Article 6

### Measurement methods

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation methods set out in Annex IV.

### Article 7

### Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IX when performing the market surveillance checks referred to in paragraph 3 of Article 8 of Regulation (EU) 2017/1369.

### Article 8

#### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this assessment, including, if appropriate, a draft revision proposal, of this review to the Consultation Forum no later than 25 December 2025. This review shall, among other matters, assess the possibility to:

- (a) address circular economy aspects;
- (b) introduce icons for compartments that may help reduce food waste; and
- (c) introduce icons for the annual energy consumption.

# Article 9

# Repeal

Delegated Regulation (EU) No 1060/2010 is repealed as of 1 March 2021.

### Article 10

### **Transitional measures**

As from 25 December 2019 until 28 February 2021, the product fiche required under point 1(b) of Article 3 of Delegated Regulation (EU) No 1060/2010 may be made available through the product database instead of being provided in printed form with the product. In that case the supplier shall ensure that if specifically requested by the dealer, the product fiche shall be made available in printed form.

### Article 11

# Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 10 shall apply from 25 December 2019 and point 1(a), (b) and (c) of Article 3 shall apply from 1 November 2020.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 11 March 2019.

For the Commission The President Jean-Claude JUNCKER

### ANNEX I

### Definitions applicable for the Annexes

The following definitions shall apply:

- (1) 'quick response (QR) code' means a matrix barcode included on the energy label of a product model that links to that model's information in the public part of the product database;
- (2) 'annual energy consumption' (AE) means the average daily energy consumption multiplied by 365 (days per year), expressed in kilowatt hour per year (kWh/a), as calculated in accordance with point 3 of Annex IV;
- (3) 'daily energy consumption' (E<sub>daily</sub>) means the electricity used by a refrigerating appliance over 24 hours at reference conditions, expressed in kilowatt hour per 24 hours (kWh/24h), calculated in accordance with point 3 of Annex IV;
- (4) 'freezing capacity' means the amount of fresh foodstuffs that can be frozen in a freezer compartment in 24 h; it shall not be lower than 4,5 kg per 24 h per 100 litres of volume of the freezer compartment, with a minimum of 2,0 kg/24h;
- (5) 'chill compartment' means a compartment which is able to control its average temperature within a certain range without user-adjustments of its control, with a target temperature equal to 2 °C, and storage conditions ranging from 3 °C to 3 °C, as set out in Annex IV, Table 3;
- (6) 'airborne acoustical noise emission' means the sound power level of a refrigerating appliance, expressed in dB(A) re 1 pW (A-weighted);
- (7) 'anti-condensation heater' means a heater which prevents condensation on the refrigeration appliance;
- (8) 'ambient controlled anti-condensation heater' means an anti-condensation heater where the heating capacity depends on either the ambient temperature or the ambient humidity or both;
- (9) 'auxiliary energy' ( $E_{aux}$ ) means the energy used by an ambient controlled anti-condensation heater, expressed in kilowatt hour per annum (kWh/a);
- (10) 'dispenser' means a device that dispenses chilled or frozen load on demand from a refrigerating appliance, such as ice-cube dispensers or chilled water dispensers;
- (11) 'variable temperature compartment' means a compartment intended for use as two (or more) alternative compartment types (for example a compartment that can be either a fresh food compartment or freezer compartment) and which is capable of being set by a user to continuously maintain the operating temperature range applicable for each declared compartment type. A compartment intended for use as a single compartment type that can also meet storage conditions of other compartment types (for example a chill compartment that may also fulfil 0-star requirements) is not a variable temperature compartment;
- (12) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (13) '2-star section' means part of a 3-star or 4-star compartment which does not have its own individual access door or lid and with target temperature and storage conditions of 12 °C;
- (14) 'climate class' means the range of ambient temperatures, as set out in point 1(j) of Annex IV, in which the refrigerating appliances are intended to be used, and for which the required storage conditions specified in Annex IV, Table 3 are met simultaneously in all compartment(s);
- (15) 'defrost and recovery period' means the period from the initiation of a defrost control cycle until stable operating conditions are re-established;

- (16) 'auto-defrost' means a feature by which compartments are defrosted without user intervention to initiate the removal of frost accumulation at all temperature-control settings or to restore normal operation, and the disposal of the defrost water is automatic;
- (17) 'defrosting type' means the method to remove frost accumulation on the evaporator(s) of a refrigerating appliance; that is auto-defrost or manual defrost;
- (18) 'manual defrost' means not having an auto-defrost function;
- (19) 'low noise refrigerating appliance' means a refrigerating appliance without vapour compression and with an airborne acoustical noise emission lower than 27 A-weighted decibel referred to 1 pico watt (dB(A) re 1 pW);
- (20) 'steady-state power consumption' ( $P_{ss}$ ) means the average power consumption in steady-state conditions, expressed in watt (W);
- (21) 'incremental defrost and recovery energy consumption' ( $\Delta E_{d-f}$ ) means the extra average energy consumption for a defrost and recovery operation expressed in watt hour (Wh);
- (22) 'defrost interval'  $(t_{d-j})$  means the representative average interval, expressed in hour (h), between one time of activation of the defrost heater and the next in two subsequent defrost and recovery cycle; or if there is no defrost heater one time of deactivation of the compressor and the next in two subsequent defrost and recovery cycles;
- (23) 'load factor' (L) means a factor accounting for the extra (beyond what is already anticipated through the higher average ambient temperature for testing) cooling load from introducing warm foodstuffs, with values as set out in point 3(a) of Annex IV;
- (24) 'standard annual energy consumption' (*SAE*) means the reference annual energy consumption of a refrigerating appliance, expressed in kilowatt hour per year (kWh/a), as calculated in accordance with point 4 of Annex IV;
- (25) 'combi parameter' (*C*) means a modelling parameter that takes into account the synergy effect when different compartment types are combined in one appliance, with values as set out in Annex IV, Table 4;
- (26) 'door heat loss factor' (D) means a compensation factor for combi appliances according to the number of different temperature compartments or the number of external doors, whichever is lower and as set out in Annex IV, Table 5. For this factor, 'compartment' does not refer to sub-compartment;
- (27) 'combi appliance' means a refrigerating appliance that has more than one compartment type of which at least one unfrozen compartment;
- (28) 'defrost factor' ( $A_d$ ) means a compensation factor that takes into account whether the refrigerating appliance has an auto-defrost or a manual defrost, with values as set out in Annex IV, Table 5;
- (29) 'built-in factor' ( $B_c$ ) means a compensation factor that takes into account whether the refrigerating appliance is built-in or freestanding, with values as set out in Annex IV, Table 5;
- (30) 'freestanding appliance' means a refrigerating appliance that is not a built-in appliance;
- (31)  $M_c$  and  $N_c$  means modelling parameters that take into account the volume-dependence of the energy use, with values as set out in Annex IV, Table 4;
- (32) 'thermodynamic parameter' ( $r_c$ ) means a modelling parameter which corrects the standard annual energy consumption to an ambient temperature of 24 °C, with values as set out in Annex IV, Table 4;
- (33) 'overall dimensions' means the space taken up by the refrigerating appliance (height, width and depth) with doors or lids closed, expressed in millimetres (mm);
- (34) 'temperature rise time' means the time taken, after the operation of the refrigerated system has been interrupted, for the temperature in a 3- or 4-star compartment to increase from -18 to 9 °C expressed in hours (h);

- (35) 'winter setting' means a control feature for a combi appliance with one compressor and one thermostat, which according to the supplier's instructions can be used in ambient temperatures below +16 °C, consisting of a switching device or function that guarantees, even if it would not be required for the compartment where the thermostat is located, that the compressor keeps on working to maintain the proper storage temperatures in the other compartments;
- (36) 'fast freeze' means a feature that can be activated by the end-user according to the supplier's instructions, which decreases the storage temperature of the freezer compartment(s) to achieve a faster freezing of unfrozen foodstuffs;
- (37) 'freezer compartment' or '4-star compartment' means a frozen compartment with a target temperature and storage conditions of 18 °C and which fulfils the requirements for the freezing capacity;
- (38) 'display mechanism' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- (39) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (40) 'nested display' means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (41) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in nongraphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications.

# ANNEX II

# Energy efficiency classes and airborne acoustical emission classes

The energy efficiency class of refrigerating appliances shall be determined on the basis of the energy efficiency index (EEI) as set out in Table 1.

# Table 1

# Energy efficiency classes of refrigerating appliances

| Energy efficiency class | Energy efficiency index (EEI) |
|-------------------------|-------------------------------|
| А                       | EEI ≤ 41                      |
| В                       | 42 < EEI ≤ 51                 |
| С                       | 51 < EEI ≤ 64                 |
| D                       | 64 < EEI ≤ 80                 |
| E                       | 80 < EEI ≤ 100                |
| F                       | 100 < EEI ≤ 125               |
| G                       | EEI > 125                     |

The EEI of a refrigerating appliance shall be determined in accordance with point 5 of Annex IV.

# Table 2

# Airborne acoustical noise emission classes

| Airborne acoustical noise emission            | Airborne acoustical noise emission class |
|-----------------------------------------------|------------------------------------------|
| < 30 dB(A) re 1 pW                            | А                                        |
| $\ge$ 30 dB(A) re 1 pW and < 36 dB(A) re 1 pW | В                                        |
| $\ge$ 36 dB(A) re 1 pW and < 42 dB(A) re 1 pW | С                                        |
| ≥ 42 dB(A) re 1 pW                            | D                                        |

### ANNEX III

# Label for refrigerating appliances

1. LABEL FOR REFRIGERATING APPLIANCES, EXCEPT FOR WINE STORAGE APPLIANCES

1.1. Label:



1.2. The following information shall be included in the label:

- I. the QR code;
- II. supplier's name or trade mark;
- III. supplier's model identifier;
- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with Annex II;
- VI. annual energy consumption (AE), expressed in kWh per year and rounded to the nearest integer;

VII.

- the sum of the volumes of the frozen compartment(s), expressed in litres and rounded to the nearest integer;

 if the refrigerating appliance does not contain frozen compartment(s) the pictogram and the value in litres in VII shall be omitted;

VIII.

- the sum of the volumes of the chill compartment(s) and the unfrozen compartment(s), expressed in litres and rounded to the nearest integer;
- if the refrigerating appliance does not contain unfrozen compartment(s) and chill compartment(s) the pictogram and the value in litres in VIII shall be omitted;
- IX. airborne acoustical noise emissions, expressed in dB(A) re 1 pW and rounded to the nearest integer. The airborne acoustical noise emission class, as set out in Table 2;
- X. the number of this Regulation, that is '2019/2016'.
- 2. LABEL FOR WINE STORAGE APPLIANCES
- 2.1. Label:



- 2.2. The following information shall be included in the label:
  - I. QR code;
  - II. supplier's name or trade mark;
  - III. supplier's model identifier;

- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with Annex II;
- VI. AE, expressed in kWh per year and rounded to the nearest integer;
- VII. the number of standard wine bottles that can be stored in the wine storage appliance;
- VIII. airborne acoustical noise emissions, expressed in dB(A) re 1 pW and rounded to the nearest integer. The airborne acoustical noise emission class, as set out in Table 2;
- IX. the number of this Regulation that is '2019/2016'.
- 3. LABEL DESIGNS
- 3.1. Label design for refrigerating appliances, except for wine storage appliances



3.2. Label design for wine storage appliances



# 3.3. Whereby:

- (a) The labels shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.
- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.
- (d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label designs for refrigerating appliances and for wine storage appliances.
- (e) Colours shall be CMYK cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.

(f) The label shall fulfil all the following requirements (numbers refer to the figures above):

- the colours of the EU logo shall be as follows:
  - the background: 100,80,0,0;
  - the stars: 0,0,100,0;
- 2 the colour of the energy logo shall be: 100,80,0,0;
- 3 the QR code shall be 100 % black;
- 4 the supplier's name shall be 100 % black and in Verdana Bold, 9 pt;
- **5** the model identifier shall be 100 % black and in Verdana Regular 9 pt;
- 6 the A to G scale shall be as follows:
  - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrows;
  - the colours of the A to G scale arrows shall be as follows:
    - A-class: 100,0,100,0;
    - B-class: 70,0,100,0;
    - C-class: 30,0,100,0;
    - D-class: 0,0,100,0;
    - E-class: 0,30,100,0;
    - F-class: 0,70,100,0;
    - G-class: 0,100,100,0;
- the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
- It he letter of the energy efficiency class shall be 100 % white and in Calibri Bold 33 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;
- the annual energy consumption value shall be in Verdana Bold 28 pt; 'kWh/annum' shall be in Verdana Regular 18 pt. The value and unit shall be centred and 100 % black;
- the pictograms shall be as shown as in the label designs and as follows:
  - the pictograms' lines shall have a weight of 1,2 pt and they and the texts (numbers and units) shall be 100 % black;
  - the text under the pictogram(s) shall be in Verdana Bold 16 pt with the unit in Verdana Regular 12 pt, and it shall be centred under the pictogram;
  - for refrigerating appliances, except wine storage appliances: if the appliance contains only frozen compartment(s) or only unfrozen compartment(s), only the relevant pictogram in the top row, as set out in point 1.2 VII and VIII, shall be shown and centred between the two vertical borders of the energy label;

— the airborne acoustical noise emission pictogram: the number of decibels in the loudspeaker shall be in Verdana Bold 12 pt, with the unit 'dB' in Verdana Regular 9 pt; the range of noise classes (A to D) shall be centred under the pictogram, with the letter of the applicable noise class in Verdana Bold 16 pt and the other letters of the noise classes in Verdana Regular 10 pt;

**1** the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

### ANNEX IV

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, or other reliable, accurate and reproducible methods, which takes into account the generally recognised state-of-the-art methods and are in line with the provisions set out below. The reference numbers of these harmonised standards have been published for this purpose in the *Official Journal of the European Union*:

- 1. General conditions for testing:
- (a) for refrigerating appliances with anti-condensation heaters that can be switched on and off by the end-user, the anticondensation heaters shall be switched on and — if adjustable — set at maximum heating and included in the annual energy consumption (AE) as daily energy consumption ( $E_{daib}$ );
- (b) for refrigerating appliances with ambient controlled anti-condensation heaters, the ambient controlled electric anticondensation heaters shall be switched off or otherwise disabled, where possible, during the measurement of energy consumption;
- (c) for refrigerating appliances with dispensers that can be switched on and off by the end-user, the dispensers shall be switched on during the energy consumption test but not operating;
- (d) for the measurement of energy consumption, variable temperature compartments shall operate at the lowest temperature that can be set by the end-user to continuously maintain the temperature range, as set out in Table 3, of the compartment type which has the lowest temperature;
- (e) for refrigerating appliances that can be connected to a network, the communication module shall be activated but there is no need to have a specific type of communication or data exchange or both during the energy consumption test. During the energy consumption test it has to be ensured that the unit is connected to a network;
- (f) for the performance of chill compartments:
  - (1) for a variable temperature compartment rated as a fresh food and/or chill compartment, the energy efficiency index (EEI) shall be determined for each temperature condition and the highest value shall be applied;
  - (2) a chill compartment shall be able to control its average temperature within a certain range without user-adjustments of its control, this can be verified during the energy consumption tests at 16 °C and 32 °C ambient temperature;
- (g) for adjustable volume compartments, when the volumes of two compartments are adjustable relative to one another by the end-user, the energy consumption and the volume shall be tested when the volume of the compartment with the higher target temperature is adjusted to its minimum volume;
- (h) the specific freezing capacity is calculated as 12 times the light load weight, divided by the freezing time to bring the temperature of the light load from +25 to - 18 °C at an ambient temperature of 25 °C expressed in kg/12h and rounded to one decimal place; the light load weight is 3,5 kg per 100 litre of the compartment volume of the frozen compartments, and shall be at least 2,0 kg;
- (i) for 4-star compartments, the specific freezing capacity shall be such that the freezing time to bring the temperature of the light load (3,5 kg/100 l) from +25 to 18 °C at an ambient temperature of 25 °C, is smaller than or equal to 18,5 h;
- (j) for the determination of the climate classes, the acronym for the ambient temperature range, that is SN, N, ST or T:
  - (1) the extended temperate (SN) has a temperature range from 10 °C to 32 °C;
  - (2) the temperate (N) has a temperature range from 16 °C to 32 °C;
  - (3) the subtropical (ST) has a temperature range from 16 °C to 38 °C; and
  - (4) the tropical (T) has a temperature range from  $16 \degree C$  to  $43 \degree C$ .

2. Storage conditions and target temperatures per compartment type:

Table 3 sets out the storage conditions and target temperature per compartment type.

- 3. Determination of the AE:
- (a) For all refrigerating appliances, except for low noise refrigerating appliances:

The energy consumption shall be determined by testing at an ambient temperature of 16 °C and 32 °C.

To determine the energy consumption, the average air temperatures in each compartment shall be equal to or below the target temperatures specified in Table 3 for each compartment type claimed by the supplier. Values above and below target temperatures may be used to estimate the energy consumption at the target temperature for each relevant compartment by interpolation, as appropriate.

The main components of energy consumption to be determined are:

- a set of steady state power consumption values (P<sub>ss</sub>) in W and rounded to one decimal place, each at a specific ambient temperature and at a set of compartment temperatures, which are not necessarily the target temperatures;
- the representative incremental defrost and recovery energy consumption ( $\Delta E_{d-f}$ ), in Wh and rounded to one decimal place, for products with one or more auto-defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16 °C ( $\Delta E_{d-f16}$ ) and 32 °C ( $\Delta E_{d-f32}$ );
- defrost interval  $(t_{d-j})$ , expressed in h and rounded to three decimal places, for products with one or more defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16 °C  $(t_{d-f16})$  and 32 °C  $(t_{d-f2})$ .  $t_{d-f}$  shall be determined for each system under a certain range of conditions;
- for each test performed the  $P_{ss}$  and  $\Delta E^{d-f}$  are added together to form a daily energy consumption at a certain ambient temperature  $E_T = 0,001 \times 24 \times (P_{ss} + \Delta E_{d-f} t_{d-f})$ , expressed in kWh/24h, specific to the settings applied;
- $E_{aux}$  expressed in kWh/a and rounded to three decimal places.  $E_{aux}$  is limited to the ambient controlled anti-condensation heater and is determined from the heater's power consumption at a number of ambient temperature and humidity conditions, multiplied with the probability that this ambient temperature and humidity condition occurs and summed; this result is subsequently multiplied with a loss factor to account for heat leakage into the compartment and its subsequent removal by the refrigeration system.

### Table 3

### Storage conditions and target temperature per compartment type

| Casura                | Compartment<br>type | Note                              | Storage c | т    |                |
|-----------------------|---------------------|-----------------------------------|-----------|------|----------------|
| Group                 |                     |                                   | Tmin      | Ттах | I <sub>c</sub> |
| Name                  | Name                | no.                               | °C        | °C   | °C             |
| Unfrozen compartments | Pantry              | (1)                               | +14       | +20  | +17            |
|                       | Wine storage        | ( <sup>2</sup> ) ( <sup>6</sup> ) | +5        | +20  | +12            |
|                       | Cellar              | (1)                               | +2        | +14  | +12            |
|                       | Fresh food          | (1)                               | 0         | +8   | +4             |
| Chill compartment     | Chill               | (3)                               | -3        | +3   | +2             |

| Crown               | Compartment            | Note                              | Storage c | т    |                |
|---------------------|------------------------|-----------------------------------|-----------|------|----------------|
| Gloup               | type                   |                                   | Tmin      | Tmax | I <sub>c</sub> |
| Name                | Name                   | no.                               | °C        | °C   | °C             |
| Frozen compartments | 0-star &<br>ice-making | (4)                               | n.a.      | 0    | 0              |
|                     | 1-star                 | (4)                               | n.a.      | -6   | -6             |
|                     | 2-star                 | (4) (5)                           | n.a.      | -12  | -12            |
|                     | 3-star                 | (4) (5)                           | n.a.      | -18  | -18            |
|                     | freezer (4-star)       | ( <sup>4</sup> ) ( <sup>5</sup> ) | n.a.      | -18  | -18            |

<u>Notes</u>

- (1)  $T_{min}$  and  $T_{max}$  are the average values measured over the test period (average over time and over a set of sensors).
- $^{(2)}$  The average temperature variation over the test period for each sensor shall be no more than ± 0,5 kelvin (K). During a defrost and recovery period the average of all sensors is not permitted to rise more than 1,5 K above the average value of the compartment.
- (3)  $T_{min}$  and  $T_{max}$  are instantaneous values during the test period.
- (4)  $T_{max}$  is the maximum value measured over the test period (maximum over time and over a set of sensors).
- (<sup>5</sup>) If the compartment is of the auto-defrosting type, the temperature (defined as the maximum of all sensors) is not permitted to rise more than 3,0 K during a defrost and recovery period.
- (6)  $T_{min}$  and  $T_{max}$  are the average values measured over the test period (average over time for each sensor) and define the maximum allowed temperature operating range

n.a.=not applicable

Each of these parameters shall be determined through a separate test or set of tests. Measurement data is averaged over a test period which is taken after the appliance has been in operation for a certain time. To improve the efficiency and accuracy of testing, the length of the test period shall not be fixed; it shall be such that the appliance is in steady state condition during this test period. This is validated by examining all data within this test period against a set of stability criteria and whether enough data could be collected in this steady state.

AE, expressed in kWh/a and rounded to two decimal places, shall be calculated as follows:

$$AE = 365 \times E_{daily}/L + E_{aux}$$

with

- the load factor L = 0.9 for refrigerating appliances with only frozen compartments and L = 1.0 for all other appliances; and
- with  $E_{daily,}$  expressed in kWh/24h and rounded to three decimal places calculated from  $E_T$  at an ambient temperature of 16 °C ( $E_{16}$ ) and at an ambient temperature of 32 °C ( $E_{32}$ ) as follows:

$$E_{daily} = 0.5 \times (E_{16} + E_{32})$$

where  $E_{16}$  and  $E_{32}$  are derived by interpolation of the energy test at the target temperatures set out in Table 3.

(b) For low noise refrigerating appliances:

The energy consumption shall be determined as provided for in point 3(a), but at an ambient temperature of 25  $^{\circ}$ C instead of at 16  $^{\circ}$ C and 32  $^{\circ}$ C.

 $E_{daily}$  expressed in kWh/24h and rounded to three decimal places for the calculation of the AE is then as follows:

$$E_{daily} = E_{25}$$

where  $E_{25}$  is  $E_T$  at an ambient temperature of 25 °C and derived by interpolation of the energy tests at the target temperatures listed in Table 3.

- 4. Determination of the standard annual energy consumption (SAE):
- (a) For all refrigerating appliances:

SAE, expressed in kWh/a, and rounded to two decimal places, is calculated as follows:

$$SAE = C \times D \times \sum_{c=1}^{n} A_{c} \times B_{c} \times [V_{c}V] \times (N_{c} + V \times r_{c} \times M_{c})$$

where

- c is the index number for a compartment type ranging from 1 to n, with n the total number of compartment types;
- V<sub>c</sub> expressed in dm<sup>3</sup> or litres and rounded to the first decimal place is the compartment volume;

V, expressed in dm<sup>3</sup> or litres and rounded to the nearest integer is the volume with  $V \leq \sum_{c=1}^{n} V_{c}$ 

 $-r_{o} N_{o} M_{c}$  and C are modelling parameters specific to each compartment with values as set out in Table 4; and

 $-A_{\alpha}B_{c}$  and D are the compensation factors with values as set out in Table 5.

When carrying out the calculations above, for the variable temperature compartments, the compartment type with the lowest target temperature for which it is declared suitable is chosen.

(b) Modelling parameters per compartment type for the calculation of SAE:

The modelling parameters are set out in Table 4.

| Tabl | е | 4 |
|------|---|---|
|------|---|---|

The values of the modelling parameters per compartment type

| Compartment type    | $r_c$ ( <sup>a</sup> ) | N <sub>c</sub> | M <sub>c</sub> | С                                     |
|---------------------|------------------------|----------------|----------------|---------------------------------------|
| Pantry              | 0,35                   |                |                | between 1,15 and 1,56 for             |
| Wine storage        | 0,60                   | 75             | 0.12           |                                       |
| Cellar              | 0,60                   | / )            | 0,12           |                                       |
| Fresh food          | 1,00                   |                |                |                                       |
| Chill               | 1,10                   | 138            | 0,12           | 4-star compartments ( <sup>b</sup> ), |
| 0-star & ice-making | 1,20                   | 138            |                | 1,15 for other combi appli-           |
| 1-star              | 1,50                   |                |                | erating appliances                    |
| 2-star              | 1,80                   |                | 0,15           |                                       |
| 3-star              | 2,10                   |                |                |                                       |
| Freezer (4-star)    | 2,10                   |                |                |                                       |

(a)  $r_c = (T_a - T_c)/20$ ; with  $T_a = 24$  °C and  $T_c$  with values as set out in Table 3.

(b) C for combi appliances with 3-or 4-star compartments is determined as follows: where frzf is the 3- or 4-star compartment volume  $V_{fr}$  as a fraction of V with frzf =  $V_{fr}/V$ :

— if  $frzf \le 0.3$  then  $C = 1.3 + 0.87 \times frzf$ ;

- else if 0.3 < frzf < 0.7 then  $C = 1.87 - 1.0275 \times frzf$ ;

- else C = 1,15.

(c) Compensation factors per compartment type in the calculation of SAE:

The compensation factors are set out in Table 5.

# Table 5

# The values of the compensation factors per compartment type

| Compartment type    |                   | A <sub>c</sub> |                           | B <sub>c</sub>        |         | D     |       |         |
|---------------------|-------------------|----------------|---------------------------|-----------------------|---------|-------|-------|---------|
|                     | Manual<br>defrost | Auto-defrost   | Freestanding<br>appliance | Built-in<br>appliance | ≤ 2 (ª) | 3 (ª) | 4 (ª) | > 4 (ª) |
| Pantry              |                   |                |                           |                       |         |       |       |         |
| Wine storage        |                   |                |                           | 1.02                  |         |       |       |         |
| Cellar              | 1                 | 1,00           |                           | 1,02                  | 1.00    | 1.02  | 1.025 | 1.05    |
| Fresh food          |                   |                |                           |                       |         |       |       |         |
| Chill               |                   |                |                           | 1,03                  |         |       |       |         |
| 0-star & ice-making |                   |                | 1,00                      |                       | 1,00    | 1,02  | 1,035 | 1,05    |
| 1-star              |                   |                |                           |                       |         |       |       |         |
| 2-star              | 1,00              | 1,10           |                           | 1,05                  |         |       |       |         |
| 3-star              |                   |                |                           |                       |         |       |       |         |
| Freezer (4-star)    |                   |                |                           |                       |         |       |       |         |
|                     |                   |                | •                         | •                     | •       | •     | •     |         |

(ª) number of external doors or compartments, whichever is lowest.

# 5. Determination of the EEI:

EEI, expressed in % and rounded to the first decimal place, calculated as:

EEI = AE/SAE.

# ANNEX V

# Product information sheet

Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 6. If the refrigerating appliance contains multiple compartments of the same type, the lines for these compartments shall be repeated. If a certain compartment type is not present, the compartment parameters and values shall be '-'.

# Table 6

# Product information sheet

# Supplier's name or trade mark:

Supplier's address (<sup>b</sup>):

Model identifier:

# Type of refrigerating appliance:

| Low-noise appliance:    | [yes/no] | Design type:                   | [built-in/<br>freestanding] |
|-------------------------|----------|--------------------------------|-----------------------------|
| Wine storage appliance: | [yes/no] | Other refrigerating appliance: | [yes/no]                    |

# General product parameters:

| Parameter                                            |                                            | Value        | Parameter                                                                                 | Value                                                              |
|------------------------------------------------------|--------------------------------------------|--------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|                                                      | Height                                     | х            |                                                                                           |                                                                    |
| Overall dimen-<br>sions (millimetre)                 | Width                                      | X            | Total volume (dm³ or l)                                                                   | х                                                                  |
|                                                      | Depth                                      | X            |                                                                                           |                                                                    |
| EEI                                                  |                                            | X            | Energy efficiency class                                                                   | [A/B/C/D/E/F/G] (°)                                                |
| Airborne acoustica<br>(dB(A) re 1 pW)                | al noise emissions                         | X            | Airborne acoustical noise emission<br>class                                               | [A/B/C/D] (°)                                                      |
| Annual energy co                                     | nsumption (kWh/a)                          | x,xx         | Climate class:                                                                            | [extended<br>temperate/<br>temperate/<br>subtropical/<br>tropical] |
| Minimum ambien<br>for which the refri<br>is suitable | t temperature (°C),<br>igerating appliance | <b>x</b> (°) | Maximum ambient temperature (°C),<br>for which the refrigerating appliance is<br>suitable | x (°)                                                              |
| Winter setting                                       |                                            | [yes/no]     |                                                                                           |                                                                    |

# **Compartment Parameters:**

|                                        |                      |                                    | Compartment par                                                                                                                                                                     | ameters and values                        |                                                               |
|----------------------------------------|----------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------|
| Compar                                 | rtment type          | Compartment Vol-<br>ume (dm³ or l) | Recommended tem-<br>perature setting for<br>optimised food stor-<br>age (°C)<br>These settings shall<br>not contradict the<br>storage conditions<br>set out in Annex IV,<br>Table 3 | Freezing capacity<br>(kg/24 h)            | Defrosting type (auto-<br>defrost = A, manual<br>defrost = M) |
| Pantry                                 | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| Wine storage                           | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| Cellar                                 | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| Fresh food                             | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| Chill                                  | [yes/no]             | X,X                                | x                                                                                                                                                                                   |                                           | [A/M]                                                         |
| 0-star or<br>ice- making               | [yes/no]             | X,X                                | x                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| 1-star                                 | [yes/no]             | X,X                                | X                                                                                                                                                                                   |                                           | [A/M]                                                         |
| 2-star                                 | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| 3-star                                 | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| 4-star                                 | [yes/no]             | X,X                                | X                                                                                                                                                                                   | X,XX                                      | [A/M]                                                         |
| 2-star section                         | [yes/no]             | X,X                                | X                                                                                                                                                                                   | _                                         | [A/M]                                                         |
| Variable<br>temperature<br>compartment | compartment<br>types | X,X                                | x                                                                                                                                                                                   | x,xx (for 4-star<br>compartments)<br>or - | [A/M]                                                         |

# For 4-star compartments

| Fast freeze facility | [yes/no] |
|----------------------|----------|
|----------------------|----------|

### Light source parameters (a) (b):

| Type of light source    | [type]          |
|-------------------------|-----------------|
| Energy efficiency class | [A/B/C/D/E/F/G] |

# Minimum duration of the guarantee offered by the manufacturer (b):

### Additional information:

Weblink to the manufacturer's website, where the information in point 4(a) Annex of Commission Regulation (EU) 2019/2019 (<sup>1</sup>) (<sup>b</sup>) is found:

(a) as determined in accordance with Commission Delegated Regulation (EU) 2019/2015 (2).

(<sup>b</sup>) changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369. (<sup>c</sup>) if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

<sup>(1)</sup> Commission Regulation (EU) 2019/2019 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 643/2009 (see page 187 of this Official Journal).

Commission Delegated Regulation (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European  $(^{2})$ Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012 (see page 68 of this Official Journal).

# 5.12.2019 EN

# ANNEX VI

### Technical documentation

- 1. The technical documentation referred to in point 1(d) of Article 3 shall include the following elements:
  - (a) the information as set out in Annex V;
  - (b) the information as set out in Table 7. If the refrigerating appliance contains multiple compartments of the same type, the lines for these compartments shall be repeated. If a certain compartment type is not present, the compartment parameters and values shall be '-'. If a parameter is not applicable, the values of that parameter shall be '-'.

# Table 7

# Additional information to be included in the technical documentation

# A general description of the refrigerating model, sufficient for it to be unequivocally and easily identified:

### Product specifications:

# General product specifications:

| Parameter                                       | Value                                  | Parameter                | Value |
|-------------------------------------------------|----------------------------------------|--------------------------|-------|
| Annual energy consumption (kWh/a)               | X                                      | Auxiliary energy (kWh/a) | x     |
| Standard annual energy con-<br>sumption (kWh/a) | X,XX                                   | EEI (%)                  | x     |
| Temperature rise time (h)                       | X,XX                                   | Combi parameter          | X,XX  |
| Door heat loss factor                           | X,XXX                                  | Load factor              | X,X   |
| Anti-condensation heater type                   | [manual on-off/ambient/other/<br>none] |                          |       |

# Additional product specifications for refrigerating appliances, except for low noise refrigerating appliances:

| Parameter                                                                     | Value | Parameter                                                                                  | Value |
|-------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------|-------|
| Daily energy consumption at 16 °C (kWh/24h)                                   | x,xxx | Daily energy consumption at 32 °C (kWh/24h)                                                | x,xxx |
| Incremental defrost and recov-<br>ery energy consumption (ª) at<br>16 °C (Wh) | X,X   | incremental defrost and recov-<br>ery energy consumption ( <sup>a</sup> ) at<br>32 °C (Wh) | X,X   |
| Defrost interval (ª) at 16 °C (h)                                             | X,X   | Defrost interval (ª) at 32 °C (h)                                                          | X,X   |

# Additional product specifications for low noise refrigerating appliances:

| Parameter                                   | Value                                | Parameter | Value |
|---------------------------------------------|--------------------------------------|-----------|-------|
| Daily energy consumption at 25 °C (kWh/24h) | ergy consumption at<br>Wh/24h) x,xxx |           | X,X   |

# **Compartment specifications:**

|                                          | Compartment parameters and values |                                           |                |                |                        |                                      |
|------------------------------------------|-----------------------------------|-------------------------------------------|----------------|----------------|------------------------|--------------------------------------|
| type                                     | Target tempera-<br>ture (°C)      | Thermodynamic parameter (r <sub>c</sub> ) | N <sub>c</sub> | M <sub>c</sub> | Defrost factor $(A_d)$ | Built-in factor<br>(B <sub>c</sub> ) |
| Pantry                                   | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | x,xx                                 |
| Wine storage                             | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | X,XX                                 |
| Cellar                                   | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | X,XX                                 |
| Fresh food                               | x                                 | x,xx                                      | Х              | x,xx           | x,xx                   | x,xx                                 |
| Chill                                    | x                                 | x,xx                                      | Х              | x,xx           | X,XX                   | x,xx                                 |
| 0-star or ice<br>making                  | x                                 | x,xx                                      | X              | X,XX           | X,XX                   | X,XX                                 |
| 1-star                                   | x                                 | x,xx                                      | x              | x,xx           | x,xx                   | x,xx                                 |
| 2-star                                   | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | x,xx                                 |
| 3-star                                   | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | X,XX                                 |
| 4-star                                   | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | X,XX                                 |
| 2-star section                           | x                                 | x,xx                                      | X              | x,xx           | x,xx                   | X,XX                                 |
| Variable tem-<br>perature<br>compartment | x                                 | x,xx                                      | x              | x,xx           | x,xx                   | x,xx                                 |

# Additional information:

The references of the harmonised standards or other reliable accurate and reproducible methods applied:

A list of all equivalent models, including model identifiers:

(a) only for products with one or more auto-defrost systems

- 2. Where the information included in the technical documentation for a particular model has been obtained:
  - (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer; or
  - (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer; or both.

The technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

### ANNEX VII

# Information to be provided in visual advertisements, in technical promotional material, in distance selling, except distance selling on the internet

- 1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in point 1(e) of Article 3 and point 1(c) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 2. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in point 1(f) of Article 3 and point 1(d) of Article 4 the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 3. Any paper-based distance selling must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in point 4 of this Annex.
- 4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:
  - (a) an arrow, containing the letter of the energy efficiency class in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
  - (b) the colour of the arrow matching the colour of the energy efficiency class;
  - (c) the range of available energy efficiency classes in 100 % black; and,
  - (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

Figure 1

### Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



- 5. Telemarketing-based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the full label and the product information sheet through a free access website, or by requesting a printed copy.
- 6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

### ANNEX VIII

### Information to be provided in the case of distance selling through the internet

- 1. The appropriate label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 3(1) and 3(2) of Annex III for refrigerating appliances. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
- 2. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall:
  - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
  - (b) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;
  - (c) have the range of available energy efficiency classes in 100 % black; and,
  - (d) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

### Figure 2

### Coloured left/right arrow, with range of energy efficiency classes indicated



- 3. In the case of a nested display, the sequence of display of the label shall be as follows:
  - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
  - (b) the image shall link to the label set out in Annex III;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
  - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
- 4. The electronic product information sheet made available by suppliers in accordance with point 1(b) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

### ANNEX IX

### Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of the Member States shall apply the following procedure:

- (1) The Member State authorities shall verify one single unit of the model.
- (2) The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to Article 3(3) of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
  - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class and the airborne acoustical noise emission class are not more favourable for the supplier than the class determined by the declared values; and
  - (c) when the Member State authorities test the unit of the model, the determined values (that is the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 8.
- (3) If the results referred to in points 2(a) and (b) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- (5) The model shall be considered to comply with the applicable requirements if for these three units the arithmetic mean of the determined values complies with the respective tolerances given in Table 8.
- (6) If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (7) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay once a decision has been taken on the non-compliance of the model according to points 3 and 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex IV.

The Member State authorities shall only apply the verification tolerances set out in Table 8 and shall only use the procedure set out in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 8, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

| Verification tolerances for measured parameters  |                                                                                                                                  |  |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--|
| Parameters                                       | Verification tolerances                                                                                                          |  |
| Total volume and compartment volume              | The determined value (a) shall not be more than 3 % or 1 litre lower — whichever is the greater value — than the declared value. |  |
| Freezing capacity                                | The determined value (ª) shall not be more than 10 % lower than the declared value.                                              |  |
| $\overline{E_{16}, E_{32}}$                      | The determined value (ª) shall not be more than 10 % higher than the declared value.                                             |  |
| - E <sub>aux</sub>                               | The determined value (ª) shall not be more than 10 % higher than the declared value.                                             |  |
| Annual energy consumption                        | The determined value (ª) shall not be more than 10 % higher than the declared value.                                             |  |
| Internal humidity of wine storage appliances (%) | The determined value (ª) shall not differ from the declared value by more than 10 %.                                             |  |
| Airborne acoustical noise emissions              | The determined value ( <sup>a</sup> ) shall not be more than 2 dB(A) re 1 pW more than the declared value.                       |  |
| Temperature rise time                            | The determined value (ª) shall not be more than 15 % higher than the declared value.                                             |  |
|                                                  |                                                                                                                                  |  |

(ª) in the case of three additional units tested as prescribed in point 4, the determined value means the arithmetic mean of the values determined for these three additional units.

# Table 8

### COMMISSION DELEGATED REGULATION (EU) 2019/2017

### of 11 March 2019

supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of household dishwashers and repealing Commission Delegated Regulation (EU) No 1059/2010

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (<sup>1</sup>), and in particular Article 11(5) and Article 16 thereof,

Whereas:

- (1) Regulation (EU) 2017/1369 of the European Parliament and of the Council empowers the Commission to adopt delegated acts as regards the labelling or re-scaling of the labelling of product groups representing significant potential for energy savings and, where relevant, other resources.
- (2) Provisions on the energy labelling of household dishwashers were established by Commission Delegated Regulation (EU) No 1059/2010 (<sup>2</sup>).
- (3) The Communication from the Commission COM(2016) 773 final (<sup>3</sup>) (ecodesign working plan) established by the Commission in application of Article 16(1) of Directive 2009/125/EC of the European Parliament and of the Council (<sup>4</sup>) sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Commission Regulation (EU) No 1016/2010 (<sup>5</sup>) and Delegated Regulation (EU) No 1059/2010.
- (4) Measures from the ecodesign working plan have an estimated potential to deliver in total more than 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Household dishwashers is one of the product groups listed in the working plan, with estimated annual electricity savings of 2,1 TWh, leading to GHG emission reductions of 0,7 Mt  $CO_2$  eq/year, and estimated water savings of 16 million m<sup>3</sup> in 2030.
- (5) Household dishwashers are among the product groups mentioned in Article 11(5)(b) of Regulation (EU) 2017/1369 for which the Commission should adopt a delegated act to introduce an A to G rescaled label.
- (6) The Commission has reviewed Delegated Regulation (EU) No 1059/2010 as required by its Article 7 and analysed technical, environmental and economic aspects as well as the impact of user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 14 of Regulation (EU) 2017/1369.
- (7) The review concluded that there was a need to introduce revised energy labelling requirements for household dishwashers.

<sup>(&</sup>lt;sup>1</sup>) OJ L 198, 28.7.2017, p. 1.

<sup>(&</sup>lt;sup>2</sup>) Commission Delegated Regulation (EU) No 1059/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household dishwashers (OJ L 314, 30.11.2010, p. 1).

<sup>(3)</sup> Communication from the Commission. Ecodesign working plan 2016-2019 (COM(2016) 773 final, Brussels, 30.11.2016).

<sup>(\*)</sup> Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10).

<sup>(5)</sup> Commission Regulation (EU) No 1016/2010 of 10 November 2010 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household dishwashers (OJ L 293, 11.11.2010, p. 31).

- (8) Non-household dishwashers have distinct characteristics and uses. They are subject to other regulatory work, in particular Directive 2006/42/EC of the European Parliament and of the Council (<sup>6</sup>), and should not be included in the scope of this Regulation. This Regulation for household dishwashers should apply to dishwashers with the same technical characteristics, regardless of the setting they are used in.
- (9) The environmental aspects of household dishwashers that have been identified as significant for the purposes of this Regulation are energy and water consumption in the use phase, the generation of waste at the end of life, the emissions to air and water in the production phase due to the extraction and processing of raw materials and in the use phase because of the consumption of electricity.
- (10) It appears from the review that the electricity and water consumption of household dishwashers can be further reduced by implementing energy labelling measures focusing on better differentiating between products. This should give suppliers an incentive to further improve the energy and resource efficiency of household dishwashers while accelerating the market transformation towards more efficient technologies.
- (11) The energy labelling of household dishwashers enable consumers to make informed choices towards more energy and resource efficient appliances. The understanding and relevance of the information provided on the label have been confirmed through a specific consumer survey in line with Article 14(2) of Regulation (EU) 2017/1369.
- (12) Household dishwashers that are displayed at trade fairs should bear the energy label if the first unit of the model has already been placed on the market or is placed on the market on the trade fair.
- (13) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>7</sup>).
- (14) Recognizing the growth of sales of energy-related product through web-stores and internet sales platforms, rather than directly from suppliers, it should be clarified that service providers of web-stores and internet sales platforms should be responsible for displaying the label provided by the supplier in proximity to the price. They should inform the supplier of that obligation, but should not be responsible for the accuracy or content of the label and the product information sheet provided. However, in application of Article 14(1)(b) of Directive 2000/31/EC of the European Parliament and of the Council (\*) on electronic commerce, such internet hosting platforms should act expeditiously to remove or to disable access to information about the product in question if they are aware of the non-compliance (e.g. missing, incomplete or incorrect label or product information sheet) for example if informed by the market surveillance authority. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.
- (15) The measures provided for in this Regulation were discussed by the Consultation Forum and with the Member States experts in accordance with Article 17 of Regulation (EU) 2017/1369.
- (16) Delegated Regulation (EU) No 1059/2010 should be repealed.

HAS ADOPTED THIS REGULATION:

# Article 1

## Subject matter and scope

1. This Regulation establishes requirements for the labelling of, and the provision of supplementary product information on, electric mains-operated household dishwashers, including built-in household dishwashers and electric mainsoperated household dishwashers that can also be powered by batteries.

(6) Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery (OJ L 157, 9.6.2006, p. 24).

<sup>(7)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(8)</sup> Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce') (OJ L 178, 17.7.2000, p. 1).

- 2. This Regulation shall not apply to:
- (a) dishwashers in the scope of Directive 2006/42/EC;
- (b) battery-operated household dishwashers that can be connected to the mains through an AC/DC converter purchased separately.

### Article 2

### Definitions

For the purposes of this Regulation, the following definitions shall apply:

- (1) 'mains' or 'electric mains' means the electricity supply from the grid of 230 (± 10 %) volts of alternating current at 50 Hz;
- (2) 'household dishwasher' means a machine which cleans and rinses tableware, and which is declared by the manufacturer in the Declaration of Conformity to comply with Directive 2014/35/EU of the European Parliament and of the Council (<sup>9</sup>) or with Directive 2014/53/EU of the European Parliament and of the Council (<sup>10</sup>);
- (3) 'built-in household dishwasher' means a household dishwasher that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top, bottom and sides) by panels;
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel.
- (4) 'point of sale' means a location where household dishwashers are displayed or offered for sale, hire or hire-purchase.

For the purposes of the annexes, additional definitions are set out in Annex I.

# Article 3

### **Obligations of suppliers**

- 1. Suppliers shall ensure that:
- (a) each household dishwasher is supplied with a printed label in the format as set out in Annex III;
- (b) the parameters of the product information sheet, as set out in Annex V, are entered into the product database;
- (c) if specifically requested by the dealer, the product information sheet shall be made available in printed form;
- (d) the content of the technical documentation, set out in Annex VI, is entered into the product database;
- (e) any visual advertisement for a specific model of household dishwasher contains the energy efficiency class and the range of energy efficiency classes available on the label in accordance with Annex VII and Annex VIII;
- (f) any technical promotional material concerning a specific model of household dishwasher, including on the internet, which describes its specific technical parameters, includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;

<sup>(&</sup>lt;sup>9</sup>) Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (OJ L 96, 29.3.2014, p. 357).

<sup>(&</sup>lt;sup>10</sup>) Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (OJ L 153, 22.5.2014, p. 62).

- (g) an electronic label in the format and containing the information, as set out in Annex III, is made available to dealers for each household dishwasher model;
- (h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each household dishwasher model.

2. The energy efficiency class and the acoustic airborne noise emission class are defined in Annex II and shall be calculated in accordance with Annex IV.

### Article 4

# **Obligations of dealers**

Dealers shall ensure that:

- (a) each household dishwasher, at the point of sale, including at trade fairs, bears the label provided by suppliers in accordance with point 1(a) of Article 3, with the label being displayed for built-in household dishwashers in such a way as to be clearly visible, and for all other household dishwashers in such a way as to be clearly visible on the outside of the front or top of the household dishwasher;
- (b) in the event of distance selling, the label and product information sheet are provided in accordance with Annexes VII and VIII;
- (c) any visual advertisement for a specific model of household dishwasher contains the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (d) any technical promotional material concerning a specific model of household dishwasher, including on the internet, which describes its specific technical parameters, includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII.

# Article 5

# **Obligations of internet hosting platforms**

Where a hosting service provider referred to in Article 14 of Directive 2000/31/EC allows the direct selling of household dishwashers through its internet website, the service provider shall enable the showing of the electronic label and electronic product information sheet provided by the dealer on the display mechanism in accordance with the provisions of Annex VIII and shall inform the dealer of the obligation to display them.

# Article 6

### Measurement methods

Information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation methods set out in Annex IV.

### Article 7

### Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IX to this Regulation when performing the market surveillance checks referred to in paragraph 3 of Article 8 of Regulation (EU) 2017/1369.

#### Article 8

### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this review including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2025.

The review shall in particular assess the following:

- (a) the improvement potential with regard to the energy consumption, functional and environmental performance of household dishwashers;
- (b) the effectiveness of existing measures in achieving changes in end-user behaviour in purchasing more energy and resource efficient appliances and using more energy and resource efficient programmes;
- (c) the possibility to address circular economy objectives.

# Article 9

### Repeal

Delegated Regulation (EU) No 1059/2010 is repealed as of 1 March 2021.

### Article 10

# Transitional measures

As from 25 December 2019 until 28 February 2021, the product fiche required under point (b) of Article 3 of Delegated Regulation (EU) No 1059/2010 may be made available through the product database instead of being provided in printed form with the product. In this case, the supplier shall ensure that if specifically requested by the dealer, the product fiche shall be made available in printed form.

### Article 11

### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 10 shall apply from 25 December 2019 and point 1(a), (b) and (c) of Article 3 shall apply from 1 November 2020.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 11 March 2019.

For the Commission The President Jean-Claude JUNCKER

### ANNEX I

### Definitions applicable for the annexes

The following definitions shall apply:

- (1) 'Energy Efficiency Index' (EEI) means the ratio of the eco programme energy consumption to the standard programme energy consumption;
- (2) 'eco programme energy consumption' (EPEC) means the energy consumption of a household dishwasher for the eco programme, expressed in kilowatt hour per cycle;
- (3) 'standard programme energy consumption' (SPEC) means the energy consumption taken as a reference as a function of the rated capacity of the household dishwasher, expressed in kilowatt hour per cycle;
- (4) 'programme' means a series of operations that are pre-defined and are declared by the supplier as suitable for specified levels of soil or types of load, or both;
- (5) 'cycle' means a complete cleaning, rinsing, and drying process, as defined by the programme selected, consisting of a series of operations until all activity ceases;
- (6) 'quick response' (QR) code means a matrix barcode included on the energy label of a product model that links to that model's information in the public part of the product database;
- (7) 'place setting' (ps) means a set of tableware for use by one person, not including serving pieces;
- (8) 'serving pieces' means items for the preparation and serving of food which can include pots, serving bowls, serving cutlery and a platter;
- (9) 'rated capacity' means the maximum number of place settings together with the serving pieces, which can be cleaned, rinsed and dried in a household dishwasher in one cycle when loaded in accordance with the supplier's instructions;
- (10) 'eco programme water consumption' (EPWC) means the water consumption of a household dishwasher for the eco programme, expressed in litres per cycle;
- (11) 'cleaning performance index' (I<sub>c</sub>) means the ratio of the cleaning performance of a household dishwasher to the cleaning performance of a reference household dishwasher;
- (12) 'drying performance index' (I<sub>D</sub>) means the ratio of the drying performance of a household dishwasher to the drying performance of a reference household dishwasher;
- (13) 'programme duration' ( $T_t$ ) means the length of time beginning with the initiation of the programme selected, excluding any user programmed delay, until the end of the programme is indicated and the user has access to the load;
- (14) 'eco' means the name of the programme of a household dishwasher declared by the manufacturer as suitable to clean normally soiled tableware, and to which the information on the energy label and the product information sheet relates;
- (15) 'off mode' means a condition in which the household dishwasher is connected to the mains and is not providing any function; the following shall also be considered as off mode:
  - (a) conditions providing only an indication of off mode;
  - (b) conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council (<sup>1</sup>);

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

- (16) 'standby mode' means a condition where the household dishwasher is connected to the mains and provides only the following functions, which may persist for an indefinite time:
  - (a) reactivation function, or reactivation function and a mere indication of enabled reactivation function, and/or
  - (b) reactivation function through a connection to a network; and/or
  - (c) information or status display, and/or
  - (d) detection function for emergency measures;
- (17) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (18) 'delay start' means a condition where the user has selected a specified delay to the beginning of the cycle of the selected programme;
- (19) 'guarantee' means any undertaking by the retailer or supplier to the consumer to:
  - (a) reimburse the price paid; or
  - (b) replace, repair or handle the household dishwashers in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising;
- (20) 'display mechanism' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- (21) 'nested display' means any visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (22) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (23) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in nongraphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications.

# ANNEX II

# A. Energy efficiency classes

The energy efficiency class of a household dishwasher shall be determined on the basis of its Energy Efficiency Index (EEI) as set out in Table 1.

The EEI of a household dishwasher shall be calculated in accordance with Annex IV.

Table 1

# Energy efficiency classes of electronic displays

| Energy efficiency class | Energy Efficiency Index |
|-------------------------|-------------------------|
| А                       | EEI < 32                |
| В                       | 32 ≤ EEI < 38           |
| С                       | 38 ≤ EEI < 44           |
| D                       | 44 ≤ EEI < 50           |
| Е                       | 50 ≤ EEI < 56           |
| F                       | 56 ≤ EEI < 62           |
| G                       | $\text{EEI} \ge 62$     |

# B. Acoustic airborne noise emission classes

The acoustic airborne noise emission class of a household dishwasher shall be determined on the basis of the acoustic airborne noise emissions as set out in Table 2.

# Table 2

# Acoustic airborne noise emission classes

| Acoustic airborne noise emission class | Noise (dB(A) |
|----------------------------------------|--------------|
| Α                                      | n < 39       |
| В                                      | 39 ≤ n < 45  |
| С                                      | 45 ≤ n < 51  |
| D                                      | 51 ≤ n       |

# ANNEX III

# Label

1. LABEL



The following information shall be included in the label:

- I. QR code;
- II. supplier's name or trade mark;
- III. supplier's model identifier;
- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with point A of Annex II;
- VI. eco programme energy consumption (EPEC) in kWh per 100 cycles, rounded to the nearest integer;
- VII. rated capacity in standard place settings, for the eco programme;
- VIII. eco programme water consumption (EPWC) in litres per cycle, rounded to one decimal place;
- IX. duration of the eco programme in h:min rounded to the nearest minute;
- X. airborne acoustic noise emissions expressed in dB(A) with respect to 1 pW and rounded to the nearest integer, and airborne acoustic noise emission class, determined in accordance with point B of Annex II;
- XI. the number of this Regulation, that is '2019/2017'.
#### 2. LABEL DESIGN

The design of the label shall be as in the figure below.



Whereby:

- (a) the label shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above;
- (b) the background of the label shall be 100 % white;
- (c) the typefaces shall be Verdana and Calibri;
- (d) the dimensions and specifications of the elements constituting the label shall be as indicated in the label design for household dishwashers;
- (e) colours shall be CMYK cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black;

- (f) the label shall fulfil all the following requirements (numbers refer to the figure above):
  - 1 the colours of the EU logo shall be as follows:
    - the background: 100,80,0,0;
    - the stars: 0,0,100,0;
  - **2** the colour of the energy logo shall be: 100,80,0,0;
  - **3** the QR code shall be 100 % black;
  - the supplier's name shall be 100 % black and in Verdana Bold, 9 pt;
  - **6** the model identifier shall be 100 % black and in Verdana Regular 9 pt;
  - 6 the A to G scale shall be as follows:
    - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrows;
    - the colours of the A to G scale arrows shall be as follows:
      - A-class: 100,0,100,0;
      - B-class: 70,0,100,0;
      - C-class: 30,0,100,0;
      - D-class: 0,0,100,0;
      - E-class: 0,30,100,0;
      - F-class: 0,70,100,0;
      - G-class: 0,100,100,0;

• the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;

It he letter of the energy efficiency class shall be 100 % white and in Calibri Bold 33 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;

• the value of the eco programme energy consumption per 100 cycles shall be in Verdana Bold 28 pt; 'kWh' shall be in Verdana Regular 18 pt; the number '100' in the pictogram representing 100 cycles shall be in Verdana Regular 14 pt The value and unit shall be centred and 100 % black;

**1** the pictograms shall be as shown as in the label designs and as follows:

- the pictograms' lines shall have a weight of 1,2 pt and they and the texts (numbers and units) shall be 100 % black;
- the texts under the pictograms shall be in Verdana Bold 16 pt with the unit in Verdana Regular 12 pt, and they shall be centred under the pictograms;
- the airborne acoustical noise emission pictogram: the number of decibels in the loudspeaker shall be in Verdana Bold 12 pt, with the unit 'dB' in Verdana Regular 9 pt; the range of noise classes (A to D) shall be centred under the pictogram, with the letter of the applicable noise class in Verdana Bold 16 pt and the other letters of the noise classes in Verdana Regular 10 pt;

**1** the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

#### ANNEX IV

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which takes into account the generally recognised state-of-the-art, and in line with the following provisions.

The energy consumption, EEI, water consumption, programme duration, cleaning and drying performance, and airborne acoustical noise emissions of a household dishwasher model shall be measured and/or calculated using the eco programme with the household dishwasher loaded at rated capacity. The energy consumption, water consumption, programme duration, cleaning and drying performance shall be measured concurrently.

The EPWC is expressed in litres per cycle and rounded to one decimal place.

The duration of the eco programme (T<sub>t</sub>) is expressed in hours and minutes and rounded to the nearest minute.

Airborne acoustical noise emissions is measured in dB(A) with respect to 1 pW and rounded to the nearest integer.

#### 1. ENERGY EFFICIENCY INDEX

For the calculation of the EEI of a household dishwasher model, the EPEC of the household dishwasher is compared to its SPEC.

(a) The EEI is calculated as follows and rounded to one decimal place:

$$EEI = (EPEC/SPEC) \times 100$$

where:

EPEC is the eco programme energy consumption of the household dishwasher, measured in kWh/cycle and rounded to three decimal places;

SPEC is the standard programme energy consumption of the household dishwasher.

- (b) The SPEC is calculated in kWh/cycle and rounded to three decimal places as follows:
  - (1) for household dishwashers with rated capacity  $ps \ge 10$  and width > 50 cm:

$$SPEC = 0.025 \times ps + 1.350$$

(2) for household dishwashers with rated capacity  $ps \le 9$  or width  $\le 50$  cm:

$$SPEC = 0,090 \times ps + 0,450$$

where ps is the number of place settings.

#### 2. CLEANING PERFORMANCE INDEX

For the calculation of the cleaning performance index  $(I_c)$  of a household dishwasher model, the cleaning performance of the eco programme is compared to the cleaning performance of a reference dishwasher.

The I<sub>C</sub> is calculated as follows and rounded to two decimal places:

$$I_{\rm C} = \exp(\ln I_{\rm C})$$

and

In I<sub>C</sub> = (1/n) × 
$$\sum_{i=1}^{n} \ln(C_{T,i}/C_{R,i})$$

where:

 $C_{T,i}$  is the cleaning performance of the eco programme of the household dishwasher under test for one test run (i), rounded to two decimal places;

C<sub>R,i</sub> is the cleaning performance of the reference dishwasher for one test run (i), rounded to two decimal places;

n is the number of test runs.

#### 3. DRYING PERFORMANCE INDEX

For the calculation of the drying performance index  $(I_D)$  of a household dishwasher model, the drying performance of the eco programme is compared to the drying performance of the reference dishwasher.

The I<sub>D</sub> is calculated as follows and rounded to two decimal places:

$$I_D = \exp(\ln I_D)$$

and

$$\text{In } I_{\text{D}} = (1/n) \times \sum_{i=1}^{n} \ln(I_{\text{D},i})$$

where:

I<sub>D,i</sub> is the drying performance index of the eco programme of the household dishwasher under test for one test run (i);

n is the number of combined cleaning and drying test runs.

The I<sub>D,i</sub> is calculated as follows and rounded to two decimal places:

$$\ln I_{D,i} = \ln (D_{T,i}/D_{R,t})$$

where:

 $D_{T,i}$  is the average drying performance score of the eco programme of the household dishwasher under test for one test run (i), rounded to two decimal places;

D<sub>R,t</sub> is the target drying score of the reference dishwasher, rounded to two decimal places.

4. LOW POWER MODES

The power consumption of the off mode ( $P_o$ ), standby mode ( $P_{sm}$ ) and where applicable delay start ( $P_{ds}$ ) are measured. The measured values are expressed in W and rounded to two decimal places.

During measurements of the power consumption in low power modes, the following shall be checked and recorded:

— the display or not of information;

- the activation or not of a network connection.

#### ANNEX V

#### Product information sheet

The information part of the product information sheet of household dishwashers pursuant to point 1(b) of Article 3 shall be entered into the product database by the supplier according to Table 3.

The user manual or other literature provided with the product shall clearly indicate the link to the model in the product database as a human-readable Uniform Resource Locator (URL) or as QR-code or by providing the product registration number.

Table 3

#### Content, order and format of the product information sheet

#### Supplier's name or trade mark:

Supplier's address (<sup>b</sup>):

Model identifier:

#### General product parameters:

| Parameter                                                                                                                                                                     | Value | Parameter                                                                                                                                                                                 | Value                    |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---|
|                                                                                                                                                                               |       |                                                                                                                                                                                           | Height                   | x |
| Rated capacity (ª) (ps)                                                                                                                                                       | х     | Dimensions in cm                                                                                                                                                                          | Width                    | x |
|                                                                                                                                                                               |       |                                                                                                                                                                                           | Depth                    | х |
| EEI (ª)                                                                                                                                                                       | X,X   | Energy efficiency class ( <sup>a</sup> )                                                                                                                                                  | [A/B/C/D/E/F/G] (°)      |   |
| Cleaning performance index (ª)                                                                                                                                                | X,XX  | Drying performance index (ª)                                                                                                                                                              | X,XX                     |   |
| Energy consumption in kWh<br>[per cycle], based on the eco<br>programme using cold water<br>fill. Actual energy consumption<br>will depend on how the appli-<br>ance is used. | x,xxx | Water consumption in litres<br>[per cycle], based on the eco<br>programme. Actual water con-<br>sumption will depend on how<br>the appliance is used and on<br>the hardness of the water. | x,x                      |   |
| Programme duration (ª) (h:min)                                                                                                                                                | x:xx  | Туре                                                                                                                                                                                      | [built-in/free-standing] |   |
| Airborne acoustical noise emis-<br>sions (ª) (dB(A) re 1 pW)                                                                                                                  | X     | Airborne acoustical noise<br>emission class (ª)                                                                                                                                           | [A/B/C/D] (°)            |   |
| Off-mode (W)                                                                                                                                                                  | X,XX  | Standby mode (W)                                                                                                                                                                          | x,xx                     |   |
| Delay start (W) (if applicable)                                                                                                                                               | X,XX  | Networked standby (W) (if applicable)                                                                                                                                                     | x,xx                     |   |

#### Minimum duration of the guarantee offered by the supplier (b):

#### Additional information:

Weblink to the supplier's website, where the information in point 6 of Annex II to Commission Regulation (EU) 2019/2022 (<sup>1</sup>) (<sup>b</sup>) is found:

(<sup>a</sup>) for the eco programme.

(b) changes to these items shall not be considered relevant for the purposes of paragraph 4 of Article 4 of Regulation (EU) 2017/1369.

(f) if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

<sup>(&</sup>lt;sup>1</sup>) Commission Regulation (EU) 2019/2022 of 1 October 2019 laying down ecodesign requirements for household dishwashers pursuant to Directive 2009/125/EC of the European Parliament and of the Council amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EU) No 1016/2010 (see page 267 of this Official Journal).

#### ANNEX VI

#### **Technical documentation**

1. The technical documentation referred to in point 1(d) of Article 3 shall include:

- (a) information as set out in Annex V;
- (b) information as set out in Table 4; these values are considered as the declared values for the purpose of the verification procedure in Annex IX;

Table 4

Information to be included in the technical documentation

| PARAMETER                                                                                                                       | UNIT          | VALUE  |
|---------------------------------------------------------------------------------------------------------------------------------|---------------|--------|
| Eco programme energy consumption (EPEC) rounded to three decimal places                                                         | kWh/cycle     | X,XXX  |
| Standard programme energy consumption (SPEC) rounded to three decimal places                                                    | kWh/cycle     | X,XXX  |
| Energy Efficiency Index (EEI)                                                                                                   | _             | X,X    |
| Eco programme water consumption (EPWC) rounded to one decimal place                                                             | l/cycle       | X,X    |
| Cleaning performance index (I <sub>C</sub> )                                                                                    |               | X,XX   |
| Drying performance index (I <sub>D</sub> )                                                                                      | _             | X,XX   |
| Duration of the eco programme $(T_t)$ rounded to the nearest minute                                                             | h:min         | X:XX   |
| Power consumption in off-mode (P <sub>o</sub> ) rounded to two decimal places                                                   | W             | X,XX   |
| Power consumption in standby mode ( $P_{sm}$ ) rounded to two decimal places                                                    | W             | X,XX   |
| Does standby mode include the display of information?                                                                           | _             | Yes/No |
| Power consumption in standby mode ( $P_{sm}$ ) in condition of networked standby (if applicable), rounded to two decimal places | W             | X,XX   |
| Power consumption in delay start ( $\ensuremath{P_{ds}}\xspace$ ) (if applicable) rounded to two decimal places                 | W             | X,XX   |
| Airborne acoustical noise emissions                                                                                             | dB(A) re 1 pW | X      |

(c) where appropriate, the references of the harmonised standards applied;

(d) where appropriate, the other technical standards and specifications used;

- (e) the details and the results of calculations performed in accordance with Annex IV;
- (f) a list of all equivalent models including the model identifier.
- 2. Where the information included in the technical documentation for a particular household dishwasher model has been obtained by any of the following methods, or both:
  - from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different supplier;
  - by calculation on the basis of design or extrapolation from another model of the same or a different supplier,

the technical documentation shall include the details of such calculation, the assessment undertaken by suppliers to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different suppliers.

#### ANNEX VII

## Information to be provided in visual advertisements, in technical promotional material in distance selling and in telemarketing, except distance selling on the internet

- 1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in point 1(e) of Article 3 and point (c) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this annex.
- 2. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in point 1(f) of Article 3 and point (d) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this annex.
- 3. Any paper-based distance selling must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in point 4 of this annex.
- 4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:
  - (a) an arrow, containing the letter of the energy efficiency class in 100 % white, Calibri Bold, and in a font size at least equivalent to that of the price, when the price is shown;
  - (b) the colour of the arrow matching the colour of the energy efficiency class;
  - (c) the range of available energy efficiency classes in 100 % black; and,
  - (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

Figure 1

#### Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



- 5. Telemarketing-based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the label and the product information sheet through the product database website, or by requesting a printed copy.
- 6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

#### ANNEX VIII

#### Information to be provided in the case of distance selling through the internet

- 1. The electronic label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 2 of Annex III. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 2 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
- 2. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall:
  - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
  - (b) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;
  - (c) have the range of available energy efficiency classes in 100 % black; and,
  - (d) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

#### Figure 2

#### Coloured left/right arrow, with range of energy efficiency classes indicated



- 3. In the case of nested display, the sequence of display of the label shall be as follows:
  - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
  - (b) the image shall link to the label set out in Annex III;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
  - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
- 4. The electronic product information sheet made available by suppliers in accordance with point 1(h) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

#### ANNEX IX

#### Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of the Member States shall apply the following procedure:

- (1) The Member State authorities shall verify one single unit of the model.
- (2) The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 3 of Article 3 of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
  - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class and the airborne acoustical noise emission class are not more favourable for the supplier than the class determined by the declared values; and
  - (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 5.
- (3) If the results referred to in points 2(a) or (b) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- (5) The model shall be considered to comply with the applicable requirements if for these three units the arithmetical mean of the determined values complies with the respective tolerances given in Table 5.
- (6) If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (7) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 and 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex IV.

The Member State authorities shall only apply the verification tolerances that are set out in Table 5 and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 5, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

#### Table 5

#### Verification tolerances

| Parameter                                            | Verification tolerances                                                                                                                                                                                                                          |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eco programme energy consumption (EPEC)              | The determined value (*) shall not exceed the declared value of EPEC by more than 5 %.                                                                                                                                                           |
| Eco programme water consumption (EPWC)               | The determined value (*) shall not exceed the declared value of EPWC by more than 5 %.                                                                                                                                                           |
| Cleaning performance index (I <sub>C</sub> )         | The determined value (*) shall not be less than the declared value of $\rm I_C$ by more than 14 %.                                                                                                                                               |
| Drying performance index (I <sub>D</sub> )           | The determined value (*) shall not be less than the declared value of $\rm I_D$ by more than 12 %.                                                                                                                                               |
| Programme duration (T <sub>t</sub> )                 | The determined value (*) shall not exceed the declared values $T_t$ by more than 5 % or 10 minutes, whichever is the longer.                                                                                                                     |
| Power consumption in off mode (P <sub>o</sub> )      | The determined value (*) of power consumption $P_0$ shall not exceed the declared value by more than 0,10 W.                                                                                                                                     |
| Power consumption in standby mode (P <sub>sm</sub> ) | The determined value (*) of power consumption $P_{sm}$ shall not exceed<br>the declared value by more than 10% if the declared value is higher<br>than 1,00 W, or by more than 0,10 W if the declared value is lower<br>than or equal to 1,00 W. |
| Power consumption in delay start (P <sub>ds</sub> )  | The determined value (*) of power consumption $P_{ds}$ shall not exceed the declared value by more than 10% if the declared value is higher than 1,00 W, or by more than 0,10 W if the declared value is lower than or equal to 1,00 W.          |
| Airborne acoustic noise emissions                    | The determined value (*) shall not exceed the declared value by more than 2 dB(A) re 1pW.                                                                                                                                                        |
| (*) T (1 (1) (1) (1) (1) (1) (1) (1) (1) (1)         |                                                                                                                                                                                                                                                  |

(\*) In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

#### COMMISSION DELEGATED REGULATION (EU) 2019/2018

#### of 11 March 2019

# supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances with a direct sales function

#### (Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (<sup>1</sup>), and in particular Articles 11 and 16 thereof,

Whereas:

- (1) Regulation (EU) 2017/1369 empowers the Commission to adopt delegated acts as regards the labelling or rescaling of the labelling of product groups representing significant potential for energy savings and, where relevant, other resources.
- (2) The Communication from the Commission COM(2016) 773 (<sup>2</sup>) (ecodesign working plan) established by the Commission in application of Article 16(1) of Directive 2009/125/EC of the European Parliament and of the Council (<sup>3</sup>) sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. Refrigerating appliances with a direct sales function are among the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of measure.
- (3) Measures from the ecodesign working plan have an estimated potential to deliver in total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Refrigerating appliances with a direct sales function is one of the product groups listed in the ecodesign working plan, with an estimated 48 TWh of annual final energy savings in 2030.
- (4) The Commission carried out two preparatory studies covering the technical, environmental and economic characteristics of refrigerating appliances with a direct sales function typically used in the Union. The studies were carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of these studies were made public and presented to the Consultation Forum established by Article 14 of Regulation (EU) 2017/1369.
- (5) The preparatory studies concluded that there was a need to the introduce energy labelling requirements for refrigerating appliances with a direct sales function.
- (6) The preparatory studies identified that energy consumption in the use phase is the most significant environmental aspect of refrigerating appliances with a direct sales function.
- (7) The preparatory studies have shown that the electricity consumption of products subject to this Regulation can be further reduced significantly by an energy labelling measure focusing on refrigerating appliances with a direct sales function.
- (8) This Regulation should apply to the following refrigerating appliances with a direct sales function: supermarket refrigerating (freezer or refrigerator) cabinets, beverage coolers, small ice-cream freezers, gelato-scooping cabinets and refrigerated vending machines.
- (9) Minibars and wine storage appliances with sales functions should not be considered refrigerating appliances with direct sales functions and therefore should be excluded from this Regulation, they are in the scope of the Commission Delegated Regulation (EU) 2019/2016 (<sup>4</sup>).

<sup>&</sup>lt;sup>(1)</sup> OJ L 198, 28.7.2017, p. 1.

<sup>&</sup>lt;sup>(2)</sup> Communication from the Commission. Ecodesign working plan 2016-2019, COM(2016) 773 final, 30.11.2016.

<sup>&</sup>lt;sup>(3)</sup> Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (OJ L 285, 31.10.2009, p. 10).

<sup>(\*)</sup> Commission Delegated Regulation (EU) 2019/2016 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances and repealing Commission Delegated Regulation (EU) No 1060/2010 (see page 102 of this Official Journal).

- (10) Vertical static-air cabinets are professional refrigerating appliances and are defined in Commission Regulation (EU) 2015/1095 (<sup>5</sup>), and should therefore be excluded from this Regulation.
- (11) Refrigerating appliances with a direct sales function that are displayed at trade fairs should bear the energy label if the first unit of the model has already been placed on the market or is placed on the market at the trade fair.
- (12) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>6</sup>).
- (13) The terminology and testing methods of this Regulation are consistent with the terminology and testing methods adopted in EN 16901, EN 16902, EN 50597 and EN ISO 23953-2.
- (14) Recognising the growth of sales of energy-related products through internet hosting platforms, rather than directly from suppliers' websites, it should be clarified that internet sales platforms should be responsible for enabling the displaying of the label provided by the supplier in proximity to the price. They should inform the dealer of that obligation, but should not be responsible for the accuracy or content of the label and the product information sheet provided. However, in application of Article 14(1)(b) of Directive 2000/31/EC of the Parliament and of the Council (7) on electronic commerce, such internet hosting platforms should act expeditiously to remove or to disable access to information about the product information sheet) for example if informed by the market surveillance authority. A supplier selling directly to end-users via its own website is covered by dealers' distance selling obligations referred to in Article 5 of Regulation (EU) 2017/1369.
- (15) The measures provided for in this Regulation were discussed by the Consultation Forum and the Member States' experts in accordance with Articles 14 and 18 of Regulation (EU) 2017/1369.

HAS ADOPTED THIS REGULATION:

#### Article 1

#### Subject matter and scope

1. This Regulation establishes requirements for the labelling of, and the provision of supplementary product information on, electric mains-operated refrigerating appliances with a direct sales function, including appliances sold for refrigeration of items other than foodstuffs.

- 2. This Regulation does not apply to:
- (a) refrigerated appliances with a direct sales function that are only powered by energy sources other than electricity;
- (b) refrigerating appliances with a direct sales function that do not use a vapour compression refrigeration cycle;
- (c) the remote components, such as the condensing unit, compressors or water condensed unit, to which a remote cabinet needs to be connected in order to function;
- (d) food processing refrigerating appliances with a direct sales function;
- (e) refrigerating appliances with a direct sales function specifically tested and approved for the storage of medicines or scientific samples;

<sup>(&</sup>lt;sup>5</sup>) Commission Regulation (EU) 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers (OJ L 177, 8.7.2015, p. 19).

<sup>(\*)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(7)</sup> Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market ('Directive on electronic commerce') (OJ L 178, 17.7.2000, p. 1).

- (f) refrigerating appliances with a direct sales function for the sale and display of live foodstuffs, such as refrigerating appliances for the sale and display of living fish and shellfish, refrigerated aquaria and water tanks;
- (g) saladettes;
- (h) horizontal serve-over counters with integrated storage designed to work at chilled operating temperatures;
- (i) refrigerating appliances with direct sales function that have no integrated system for producing cooling and function by ducting chilled air that is produced by an external air chiller unit; this does not include remote cabinets nor does it include category 6 refrigerated vending machines, as defined Annex IV, Table 4;
- (j) corner cabinets;
- (k) vending machines that are designed to work at frozen operating temperatures;
- (l) serve-over fish counters with flaked ice;
- (m) professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers as defined in Regulation (EU) 2015/1095;
- (n) wine storage appliances and minibars.

#### Article 2

#### Definitions

For the purpose of this Regulation, the following definitions shall apply:

- 'refrigerating appliance with a direct sales function' means an insulated cabinet with one or more compartments that are controlled at specific temperatures, cooled by natural or forced convection through one or more energy consuming means and intended for displaying and selling with or without assisted serving, foodstuffs and other items at specified temperatures below the ambient temperature to customers, accessible directly through open sides or through one or more doors or drawers or both including refrigerating appliances with a direct sales function with areas used for storage of foodstuffs and other items not accessible by customers, and excluding minibars and wine storage appliances;
- 2. 'foodstuffs' means food, ingredients, beverages, including wine, and other items primarily used for consumption which require refrigeration at specified temperatures;
- 'condensing unit' means a product integrating at least one electrically driven compressor and one condenser, capable of cooling down and continuously maintaining low or medium temperature inside a refrigerated appliance or system, using a vapour compression cycle once connected to an evaporator and an expansion device, as defined in Regulation (EU) 2015/1095;
- 4. 'remote cabinet' means a refrigerating appliance with a direct sales function which consists of a factory-made assembly of components that in order to function as a refrigerating appliance with a direct sales function needs to be connected additionally to remote components (condensing unit and/or compressor and/or water condensed unit) which are not an integral part of the cabinet;
- 5. 'food processing refrigerating appliances with a direct sales function' means a refrigerating appliance with a direct sales function specifically tested and approved for carrying out food processing such as ice-cream makers or microwave-equipped refrigerated vending machines or ice makers; this does not include refrigerating appliances with a direct sales function equipped with one compartment specifically designed for carrying out food processing which is equivalent to less than 20 % of the appliance total net volume;
- 6. 'net volume' means the part of the gross volume of any compartment which is left after deduction of the volume of components and spaces unusable for the storage or display of foodstuffs and other items, in cubic decimetres (dm<sup>3</sup>) or litres (L);
- 7. 'gross volume' means the volume within the inside liners of the compartment without internal fittings and with door or lid closed, in cubic decimeters (dm<sup>3</sup>) or litres (L);

- 8. 'specifically tested and approved' means that the product complies with all the following requirements:
  - (a) it has been specifically designed and tested for the mentioned operating condition or application, according to the Union legislation mentioned or related acts, relevant Member State legislation, and/or relevant European or international standards;
  - (b) it is accompanied by evidence, to be included in the technical documentation in the form of a certificate, a type approval mark or a test report, that the product has been specifically approved for the mentioned operating condition or application;
  - (c) it is placed on the market specifically for the mentioned operating condition or application, as evidenced at least by the technical documentation, information provided for the product and any advertising or marketing materials;
- 9. 'saladette' means a refrigerating appliance with a direct sales function with one or more doors or drawer fronts in the vertical plane that has cut-outs in the top surface into which temporary storage bins can be inserted for easy-access storage of foodstuffs such as pizza toppings or salad items;
- 10. 'horizontal serve-over counter with integrated storage' means a horizontal cabinet for assisted service, which includes refrigerated storage which is of at least 100 litres (L) per meter (m) length and which is normally placed at the serve-over counter's base;
- 11. 'horizontal cabinet' means a refrigerating appliance with a direct sales function with horizontal display, opening on its top, and accessible from above;
- 12. 'chilled operating temperature' means a temperature between -3,5 degrees Celsius (°C) and 15 degrees Celsius (°C) for appliances equipped with energy management systems for saving energy and between -3,5 degrees Celsius (°C) and 10 degrees Celsius (°C) for appliances not equipped with energy management systems for saving energy;
- 13. 'operating temperature' means the reference temperature inside a compartment during testing;
- 14. 'refrigerated vending machine' means a refrigerating appliance with a direct sales function designed to accept consumer payments or tokens to dispense chilled foodstuffs and other items without on-site labour intervention;
- 15. 'corner cabinet' means a refrigerating appliance with a direct sales function used to achieve geometrical continuity between two linear cabinets that are at an angle to each other and/or that form a curve. A corner cabinet does not have a recognisable longitudinal axis or length since it consists only of a filling shape (wedge or similar) and is not designed to function as a stand-alone refrigerated unit. The two ends of the corner cabinet are inclined at an angle between 30° and 90°;
- 16. 'frozen operating temperature' means a temperature below -12 degrees celsius (°C);
- 17. 'serve-over fish counter with flaked ice' means a cabinet for horizontal assisted service, designed and marketed specifically for fresh fish display. It is characterised by having on its top a bed of flaked ice used to maintain the temperature of the displayed fresh fish, and it also has a built in drain outlet;
- 18. 'wine storage appliance' means a refrigerating appliance with only one type of compartment for the storage of wine, with precision temperature control for the storage conditions and target temperature, and equipped with anti-vibra-tion measures, as defined in Delegated Regulation (EU) 2019/2016;
- 19. 'compartment' means an enclosed space within a refrigerating appliance with a direct sales function, separated from other compartment(s) by a partition, container, or similar construction, which is directly accessible through one or more external doors and may itself be divided into sub-compartments. For the purpose of this Regulation, unless specified otherwise, 'compartment' refers to both compartments and sub-compartments;
- 20. 'external door' is the part of a refrigerating appliance with a direct sales function that can be moved or removed to at least allow inserting the load from the exterior to the interior or extracting the load from the interior to the exterior of the refrigerating appliance with a direct sales function;
- 21. 'sub-compartment' means an enclosed space in a compartment having a different operating temperature range from the compartment in which it is located;

- 'minibar' means a refrigerating appliance with a total volume of maximum 60 litres, which is primary intended for the storage and sales of foodstuffs in hotel rooms and similar premises, as defined in Delegated Regulation (EU) 2019/2016;
- 23. 'point of sale' means a location where refrigerating appliances with a direct sales function are displayed or offered for sale, hire or hire-purchase;
- 24. 'energy efficiency index' (EEI) means an index number for the relative energy efficiency of a refrigeration appliance with a direct sales function expressed in percentage (%), calculated in accordance with point 2 of Annex IV.

#### Article 3

#### **Obligations of suppliers**

- 1. Suppliers shall ensure that:
- (a) each refrigerating appliance with a direct sales function is supplied with a printed label in the format, as set out in Annex III;
- (b) the parameters of the product information sheet, set out in Annex V, are entered into the product database;
- (c) if specifically requested by the dealer, the product information sheet shall be made available in printed form;
- (d) the content of the technical documentation, set out in Annex VI, is entered into the product database;
- (e) any visual advertisement for a specific model of a refrigerating appliance with a direct sales function contains the energy efficiency class and the range of energy efficiency classes available on the label, in accordance with Annex VII;
- (f) any technical promotional material or other promotional material concerning a specific model of refrigerating appliances with a direct sales function, including technical promotional material or other promotional material on the internet, includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annex VII and Annex VIII;
- (g) an electronic label in the format and containing the information, as set out in Annex III, shall be made available to dealers for each refrigerating appliance with a direct sales function model;
- (h) an electronic product information sheet, as set out in Annex V, is made available to dealers for each refrigerating appliance with a direct sales function model.
- 2. The energy efficiency class shall be based on the energy efficiency index calculated in accordance with Annex II.

#### Article 4

#### **Obligations of dealers**

Dealers shall ensure that:

- (a) each refrigerating appliance with a direct sales function, at the point of sale of the appliance, including at trade fairs, bears the label provided by suppliers, in accordance with point 1(a) of Article 3, with the label displayed for built-in appliances in such a way to be clearly visible, and for other refrigerating appliances with a direct sales function in such a way as to be clearly visible on the outside of the front or top of the refrigerating appliance;
- (b) in the event of distance selling, the label and product information sheet are provided, in accordance with Annexes VII and VIII;
- (c) any visual advertisement for a specific model of a refrigerating appliance with a direct sales function, including on the internet, contains the energy efficiency class and the range of energy efficiency classes available on the label, in accordance with Annex VII and VIII;
- (d) any technical promotional material or other promotional material concerning a specific model of a refrigerating appliance with a direct sales function, including technical promotional material or other promotional material on the internet, which describes its specific technical parameters includes the energy efficiency class of that model and the range of energy efficiency classes available on the label, in accordance with Annexes VII and VIII.

#### Article 5

#### **Obligations of internet hosting platforms**

Where a hosting service provider as referred to in Article 14 of Directive 2000/31/EC allows the direct selling of refrigerating appliances with a direct sales function through its internet site, the service provider shall enable the showing of the electronic label and electronic product fiche sheet provided by the dealer on the display mechanism, in accordance with the provisions of Annex VIII, and shall inform the dealer of the obligation to display them.

#### Article 6

#### Measurement methods

The information to be provided pursuant to Articles 3 and 4 shall be obtained by reliable, accurate and reproducible measurement and calculation methods, which take into account the recognised state-of-the-art measurement and calculation methods, set out in Annex IV.

#### Article 7

#### Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IX when performing the market surveillance checks referred to in paragraph 3 of Article 8 of Regulation (EU) 2017/1369.

#### Article 8

#### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this assessment, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2023. The review shall among other matters assess:

- (a) the energy efficiency classes;
- (b) the possibility to address circular economy aspects;
- (c) the feasibility of refining the classification of products, inter alia, considering the difference between integral and remote cabinets.

#### Article 9

#### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 11 March 2019.

For the Commission The President Jean-Claude JUNCKER

#### ANNEX I

#### **Definitions applicable for the Annexes**

The following definition shall apply:

- (1) 'beverage cooler' means a refrigerating appliance with a direct sales function designed to cool, at a specified speed, packaged non-perishable beverages, excluding wine, loaded at ambient temperature, for sale at specified temperatures below the ambient temperature. A beverage cooler allows accessing the beverages directly through open sides or through one or more doors, drawers or both. The temperature inside the cooler may increase during periods of no demand, for the purpose of energy saving, in view of the non-perishable nature of beverages;
- (2) 'ice-cream freezer' means a horizontal closed cabinet intended to store and/or display and sell pre-packed ice cream, where access by the consumer to the pre-packed ice-cream is achieved by opening a non-transparent or transparent lid from the top, with a net volume  $\leq 600$  litres (L) and, only in the case of transparent lid ice-cream freezers, a net volume divided by the TDA  $\geq 0.35$  meters (m);
- (3) 'transparent lid' means a door made of a transparent material that covers at least 75 % of the door surface and that allows the end-user to clearly see items through it;
- (4) 'total display area (TDA)' means the total visible foodstuffs and other items area, including visible area through glazing, defined by the sum of horizontal and vertical projected surface areas of the net volume, expressed in square meters (m<sup>2</sup>);
- (5) 'quick response' (QR) code means a matrix barcode included on the energy label of a product model that links to that model's information in the public part of the product database;
- (6) 'annual energy consumption' (AE) means the average daily energy consumption multiplied by 365 (days per year) expressed in kilowatt hour per year (kWh/a), calculated in accordance with point 2(b) of Annex IV;
- (7) 'daily energy consumption' ( $E_{daily}$ ) means the energy used by a refrigerating appliance with a direct sales function over 24 hours at reference conditions, expressed in kilowatt hour per day (kWh/24h);
- (8) 'standard annual energy consumption' (SAE) means the reference annual energy consumption of a refrigeration appliance with a direct sales function, expressed in kilowatt hour per year (kWh/a), calculated in accordance with point 2(c) of Annex IV;
- (9) 'M' and 'N' means modelling parameters that take into account the total display area or volume-dependence of the energy use, with values as set out in Table 3, Annex IV;
- (10) 'temperature coefficient' (C) means a correction factor that accounts for the difference in operating temperature;
- (11) 'climate class factor' (*CC*) means a correction factor that accounts for the difference in ambient conditions for which the refrigerating appliance is designed for;
- (12) 'P' means a correction factor that accounts for the differences between integral and remote cabinets;
- (13) 'integral cabinet' means a refrigerating appliance with a direct sales function that has an integral refrigeration system which incorporates a compressor and condensing unit;
- (14) 'gelato-scooping cabinet' means a refrigerating appliance with a direct sales function in which ice-cream can be stored, displayed and scooped, within prescribed temperature limits as set out in Annex IV, Table 4;
- (15) 'vertical cabinet' means a refrigerating appliance with a direct sales function with a vertical or inclined display opening;

- (16) 'semi- vertical cabinet' means a vertical cabinet with a vertical or inclined display opening whose overall height does not exceed 1,5 meters (m);
- (17) 'combined cabinet' means a refrigerating appliance with a direct sales function which combines display and opening directions from a vertical and a horizontal cabinet;
- (18) 'supermarket cabinet' means a refrigerating appliance with a direct sales function intended for the sale and display of foodstuffs and other items in retail applications, such as in supermarkets. Beverage coolers, refrigerated vending machines, gelato-scooping cabinets and ice-cream freezers are not considered supermarket cabinets;
- (19) 'refrigerator' means a refrigerating appliance with a direct sales function that continuously maintains the temperature of the products stored in the cabinet at chilled operating temperature;
- (20) 'freezer' means a refrigerating appliance with a direct sales function that continuously maintains the temperature of the products stored in the cabinet at frozen operating temperature;
- (21) 'roll-in cabinet' means a supermarket cabinet which enables goods to be displayed directly on their pallets or rolls which can be placed inside by lifting, swinging, or removing the lower front part, where fitted;
- (22) 'M-package' means a test package fitted with a temperature measuring device;
- (23) 'multi-temperature vending machine' means a refrigerated vending machine including at least two compartments with different operating temperatures;
- (24) 'display mechanism' means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- (25) 'tactile screen' means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (26) 'nested display' means a visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (27) 'alternative text' means text provided as an alternative to a graphic allowing information to be presented in nongraphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications.

#### ANNEX II

#### Energy efficiency classes

The energy efficiency class of a refrigerating appliance with a direct sales function shall be determined on the basis of its EEI as set out in Table 1.

#### Table 1

#### Energy efficiency classes of refrigerating appliances with a direct sales function

| Energy Efficiency Class | EEI                        |
|-------------------------|----------------------------|
| А                       | EEI < 10                   |
| В                       | $10 \le \text{EEI} \le 20$ |
| С                       | 20 ≤ EEI < 35              |
| D                       | 35 ≤ EEI < 50              |
| Е                       | 50 ≤ EEI < 65              |
| F                       | 65 ≤ EEI < 80              |
| G                       | EEI ≥ 80                   |

The Energy EEI of a refrigerating appliance with a direct sales function shall be determined in accordance with point 2 of Annex IV.

#### ANNEX III

#### Label for refrigerating appliances with a direct sales function

- 1. LABEL FOR REFRIGERATING APPLIANCES WITH A DIRECT SALES FUNCTION, EXCEPT FOR BEVERAGE COOLERS AND ICE-CREAM FREEZERS
- 1.1. Label:



- 1.2. The following information shall be included in the label:
  - I. QR code;
  - II. supplier's name or trade mark;
  - III. supplier's model identifier;
  - IV. scale of energy efficiency classes from A to G;
  - V. the energy efficiency class determined in accordance with Annex II;
  - VI. AE in kWh per year and rounded to the nearest integer;

VII.

 for refrigerated vending machines: the sum of the net volumes of all compartments with chilled operating temperatures, expressed in litres (L) and rounded to the nearest integer;

- for all other refrigerating appliances with a direct sales function: the sum of the display areas with chilled operating temperatures, expressed in square meters (m<sup>2</sup>) and rounded to two decimal places;
- for refrigerating appliances with a direct sales function that does not contain compartments with chilled operating temperatures: the pictogram and the values in litres (L) or square meters (m<sup>2</sup>) in VII are omitted;

VIII.

- for refrigerating appliances with a direct sales function with all compartments with chilled operating temperature having the same temperature class, with the exception of refrigerated vending machines:
  - the temperature at the top: the highest temperature of the warmest M-package of the compartment(s) with chilled operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 4;
  - the temperature at the bottom: the lowest temperature of the coldest M-package of the compartment(s) with chilled operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, or the highest minimum temperature of all M-packages of the compartment(s) with chilled operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 4;
- for refrigerated vending machines:
  - the temperature at the top: the maximum measured product temperature of the compartment(s) with chilled operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 4;
  - the temperature at the bottom: the temperature is omitted;
- for refrigerating appliances with a direct sales function that does not contain compartments with chilled operating temperatures the pictogram and the values in degrees Celsius (°C) in VIII shall be omitted;

#### IX.

- for all refrigerating appliances with a direct sales function, except for vending machines: the sum of the display areas with frozen operating temperatures, expressed in square meter (m<sup>2</sup>) and rounded to two decimal places;
- for refrigerating appliances with a direct sales function that does not contain compartments with frozen operating temperatures: the pictogram and the values in square meters (m<sup>2</sup>) in IX are omitted;

Х.

- for refrigerating appliances with a direct sales function with all compartments with frozen operating temperatures having the same temperature class, with the exception of refrigerated vending machines:
  - the temperature at the top: the highest temperature of the warmest M-package of the compartment(s) with frozen operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 4;
  - the temperature at the bottom: the lowest temperature of the coldest M-package of the compartment(s) with frozen operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, or the highest minimum temperature of all M-packages of the compartment(s) with frozen operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 4;
- for refrigerated vending machines:
  - the temperature at the top: the maximum measured product temperature of the compartment(s) with frozen operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 4;

- the temperature at the bottom: the temperature is omitted;
- for refrigerating appliances with a direct sales function that does not contain compartments with frozen operating temperatures: the pictogram and the values in degrees Celsius (°C) in X are omitted;
- XI. the number of this Regulation, that is '2019/2018'.
- 2. LABEL FOR BEVERAGE COOLERS
- 2.1. Label:



- 2.2. The following information shall be included in the label:
  - I. QR code;
  - II. supplier's name or trade mark;
  - III. supplier's model identifier;
  - IV. scale of energy efficiency classes from A to G;
  - V. the energy efficiency class determined in accordance with Annex II;;
  - VI. AE in kWh per year and rounded to the nearest integer;

- VII. the sum of the gross volumes of all compartments with chilled operating temperatures, expressed in litres (L) and rounded to the nearest integer;
- VIII. the highest average compartment temperature of all compartments with chilled operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 5;
  - IX. the warmest ambient temperature, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 6;
  - X. the number of this Regulation, that is '2019/2018'.
- 3. LABEL FOR ICE-CREAM FREEZERS
- 3.1. Label:



3.2. The following information shall be included in the label:

- I. QR-code;
- II. supplier's name or trade mark;
- III. supplier's model identifier;
- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with Annex II;
- VI. AE in kWh per year and rounded to the nearest integer;

- VII. the sum of the net volumes of all compartments with frozen operating temperatures, expressed in litres (L) and rounded to the nearest integer;
- VIII. the highest average compartment temperature of all compartments with frozen operating temperatures, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 7;
  - IX. the maximum ambient temperature, in degrees Celsius (°C) and rounded to the nearest integer, as set out in Table 8;
  - X. the number of this Regulation, that is '2019/2018'.
- 4. LABEL DESIGNS
- 4.1. Label design for refrigerating appliances with a direct sales function, except for beverage coolers and ice-cream freezers:



4.2. Label design for beverage coolers:



4.3. Label design for ice-cream freezers:



#### 4.4. Whereby:

- (a) The labels shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.
- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.
- (d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label designs in points 4.1 to 4.3.
- (e) Colours shall be CMYK cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.

(f) The labels shall fulfil all the following requirements (numbers refer to the figures above):

- the colours of the EU logo shall be as follows:
  - the background: 100,80,0,0;
  - the stars: 0,0,100,0;
- 2 the colour of the energy logo shall be: 100,80,0,0;
- 3 the QR code shall be 100 % black;
- 4 the supplier's name shall be 100 % black and in Verdana Bold, 9 pt;
- **5** the model identifier shall be 100 % black and in Verdana Regular 9 pt;
- 6 the A to G scale shall be as follows:
  - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrows;
  - the colours of the A to G scale arrows shall be as follows:
    - A-class: 100,0,100,0;
    - B-class: 70,0,100,0;
    - C-class: 30,0,100,0;
    - D-class: 0,0,100,0;
    - E-class: 0,30,100,0;
    - F-class: 0,70,100,0;
    - G-class: 0,100,100,0;
- the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
- B the letter of the energy efficiency class shall be 100 % white and in Calibri Bold 33 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;
- the annual energy consumption value shall be in Verdana Bold 28 pt; 'kWh/annum' shall be in Verdana Regular 18 pt. They shall be centred and 100 % black;
- the pictograms shall be as shown as in the label designs and as follows:
  - the pictograms' lines shall have a weight of 1,2 pt and they and the texts (numbers and units) shall be 100 % black;
  - the numbers under the pictograms shall be in Verdana Bold 16 pt with the units in Verdana Regular 12 pt and they shall be centred under the pictograms;
  - the temperatures values shall be in Verdana Bold 12 pt with the "C' in Verdana Regular 12 pt and they shall be placed either on the right side of the thermometer pictogram or inside the pictogram representing the ambient temperature;

— for refrigerating appliances with a direct sales function, except for beverage coolers and ice-cream freezers: if the appliance contains only frozen compartment(s) or only unfrozen compartment(s), only the relevant pictograms, as set out in point 1.2 VII, VIII, IX and X, shall be shown and centred between the internal divider below the annual energy consumption and the bottom of the energy label;

**1** the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

#### ANNEX IV

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods and are in line with the following provisions set out below. The reference numbers of these harmonised standards have been published for this purpose in the *Official Journal* of the European Union.

- 1. General conditions for testing:
- (a) the ambient conditions shall correspond to Set 1, except for ice-cream freezers and gelato scooping cabinets which shall be tested in ambient conditions corresponding to Set 2, as set out in Table 2.
- (b) where a compartment can be set to different temperatures, it shall be tested at the lowest operating temperature.
- (c) refrigerated vending machines with compartments with variable volumes shall be tested with the net volume of the compartment with the highest operating temperature adjusted to its minimum net volume.
- (d) for beverage coolers, the specified cooling speed shall be according to the half reload recovery time.

| Table | 2 |
|-------|---|
|-------|---|

Ambient conditions

|       | Dry bulb temperature,<br>°C | Relative humidity, % | Dew point, °C | Water vapour mass in dry air, g/kg |
|-------|-----------------------------|----------------------|---------------|------------------------------------|
| Set 1 | 25                          | 60                   | 16,7          | 12,0                               |
| Set 2 | 30                          | 55                   | 20,0          | 14,8                               |

2. Determination of the EEI:

(a) For all refrigerating appliances with a direct sales function, the EEI, expressed in % and rounded to the first decimal place, is the ratio of the AE (in kWh/a) and the reference SAE (in kWh/a) and is calculated as:

$$EEI = AE/SAE.$$

(b) The AE, expressed in kWh/a and rounded to two decimal places, is calculated as follows:

$$AE = 365 \times E_{daily};$$

with:

 $- E_{daily}$  is the energy consumption of the refrigerating appliance with a direct sales function over 24 hours, expressed in kWh/24h and rounded to three decimal places.

(c) The SAE is expressed in kWh/a and rounded to two decimal places. For refrigerating appliances with a direct sales function with all compartments having the same temperature class and for refrigerated vending machines, the SAE is calculated as follows:

$$SAE = 365 \times P \times (M + N \times Y) \times C;$$

For refrigerating appliances with a direct sales function with more than one compartment having different temperature classes, with the exception of refrigerated vending machines, the SAE is calculated as follows:

$$SAE = 365 \times P \times \sum_{c=1}^{n} (M + N \times Y_c) \times C_{ci}$$

where:

(1) c is the index number for a compartment type ranging from 1 to n, with n being the total number of compartment types.

(2) The values of M and N are given in Table 3.

| Category                                                | Value for M | Value for N |
|---------------------------------------------------------|-------------|-------------|
| Beverage coolers                                        | 2,1         | 0,006       |
| Ice-cream freezers                                      | 2,0         | 0,009       |
| Refrigerated vending machines                           | 4,1         | 0,004       |
| Gelato-scooping cabinets                                | 25,0        | 30,400      |
| Vertical and combined supermarket refrigerator cabinets | 9,1         | 9,100       |
| Horizontal supermarket refrigerator cabinets            | 3,7         | 3,500       |
| Vertical and combined supermarket freezer cabinets      | 7,5         | 19,300      |
| Horizontal supermarket freezer cabinets                 | 4,0         | 10,300      |
| Roll-in cabinets (from 1 March 2021)                    | 9,2         | 11,600      |
| Roll-in cabinets (from 1 September 2023)                | 9,1         | 9,100       |

(3) The values of C, the temperature coefficient are given in Table 4.

Table 4

## Temperature conditions and corresponding temperature coefficient values, C

| (a) Supermarket cabinets                                |                      |                                                       |                                                      |                                                                 |             |
|---------------------------------------------------------|----------------------|-------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------|-------------|
| Category                                                | Temperature<br>class | Highest tempera-<br>ture of warmest<br>M-package (°C) | Lowest tempera-<br>ture of coldest<br>M-package (°C) | Highest mini-<br>mum tempera-<br>ture of all M-<br>package (°C) | Value for C |
| Vertical, combined supermarket                          | M2                   | ≤ +7                                                  | ≥ -1                                                 | n.a.                                                            | 1,00        |
| remgerator cabinets                                     | H1 and H2            | ≤ +10                                                 | ≥ -1                                                 | n.a.                                                            | 0,82        |
|                                                         | M1                   | ≤ +5                                                  | ≥ -1                                                 | n.a.                                                            | 1,15        |
| Horizontal supermarket refriger-<br>ator cabinets       | M2                   | ≤ +7                                                  | ≥ -1                                                 | n.a.                                                            | 1,00        |
|                                                         | H1 and H2            | ≤ +10                                                 | ≥ -1                                                 | n.a.                                                            | 0,92        |
|                                                         | M1                   | ≤ +5                                                  | ≥ -1                                                 | n.a.                                                            | 1,08        |
| Vertical and combined super-<br>market freezer cabinets | L1                   | ≤ -15                                                 | n.a.                                                 | ≤ -18                                                           | 1,00        |
|                                                         | L2                   | ≤ -12                                                 | n.a.                                                 | ≤ -18                                                           | 0,90        |
|                                                         | L3                   | ≤ -12                                                 | n.a.                                                 | ≤ -15                                                           | 0,90        |
| Horizontal supermarket freezer cabinets                 | L1                   | ≤ -15                                                 | n.a.                                                 | ≤ -18                                                           | 1,00        |
|                                                         | L2                   | ≤ -12                                                 | n.a.                                                 | ≤ -18                                                           | 0,92        |
|                                                         | L3                   | ≤ -12                                                 | n.a.                                                 | ≤ <b>-</b> 15                                                   | 0,92        |

### Table 3 M and N values

| Temperature class | Highest temperature of warmest M-package (°C) | Lowest temperature of cold-<br>est M-package (°C) | Highest minimum tempera-<br>ture of all M-package (°C) | Value for C |
|-------------------|-----------------------------------------------|---------------------------------------------------|--------------------------------------------------------|-------------|
| G1                | -10                                           | -14                                               | n.a.                                                   | 1,00        |
| G2                | -10                                           | -16                                               | n.a.                                                   | 1,00        |
| G3                | -10                                           | -18                                               | n.a.                                                   | 1,00        |
| L1                | -15                                           | n.a.                                              | -18                                                    | 1,00        |
| L2                | -12                                           | n.a.                                              | -18                                                    | 1,00        |
| L3                | -12                                           | n.a.                                              | -15                                                    | 1,00        |
| S                 |                                               | Special classification                            | 1                                                      | 1,00        |

#### (b) Gelato-scooping cabinets

#### (c) Refrigerated vending machines

| Temperature class (**) | Maximum measured product temperature $(T_v)$ (°C) | Value for C               |
|------------------------|---------------------------------------------------|---------------------------|
| Category 1             | 7                                                 |                           |
| Category 2             | 12                                                |                           |
| Category 3             | 3                                                 | 1+(12-T <sub>v</sub> )/25 |
| Category 4             | (T <sub>V1</sub> +T <sub>V2</sub> )/2 (*)         |                           |
| Category 6             | (T <sub>V1</sub> +T <sub>V2</sub> )/2 (*)         |                           |

#### (d) other refrigerating appliances with a direct sales function

| Category         | Value for C |
|------------------|-------------|
| Other appliances | 1,00        |

Notes:

- (\*) For multi-temperature vending machines,  $T_v$  shall be the average of  $T_{v1}$  (the maximum measured product temperature in the warmest compartment) and  $T_{v2}$  (the maximum measured product temperature in the coldest compartment).
- (\*\*) category 1 = refrigerated closed fronted can and bottle machines where the products are held in stacks, category 2 = refrigerated glass fronted can and bottle, confectionery & snack machines, category 3 = refrigerated glass fronted machines entirely for perishable foodstuffs, category 4 = refrigerated multi-temperature glass fronted machines, category 6 = combination machines consisting of different categories of machine in the same housing and powered by one chiller.

n.a = not applicable

#### (4) Coefficient Y is calculated as follows:

(a) for beverage coolers:

 $Y_c$  is the equivalent volume of the compartments of the beverage cooler with target temperature *Tc*, (*Veq<sub>c</sub>*), calculated as follows:

$$Y_c = Veq_c = GrossVolume_c \times ((25 - Tc)/20) \times CC;$$

where Tc is the average compartment classification temperature of the compartment and CC is the climate class factor. The values for Tc are set out in Table 5. The values for CC are set out in Table 6.

Table 5

#### Temperature classes and corresponding average compartment temperatures (Tc) for beverage coolers

| Temperature class | Tc (°C) |
|-------------------|---------|
| K1                | +3,5    |
| К2                | +2,5    |
| К3                | -1,0    |
| К4                | +5,0    |

 Table 6

 Operating conditions and CC values for beverage coolers

| Warmest ambient temperature (°C) | Ambient relative humidity (%) | СС   |
|----------------------------------|-------------------------------|------|
| +25                              | 60                            | 1,00 |
| +32                              | 65                            | 1,05 |
| +40                              | 75                            | 1,10 |

#### (b) for ice-cream freezers:

 $Y_c$  is the equivalent volume of compartments of the ice-cream freezer with target temperature *Tc*, (*Veq<sub>c</sub>*), calculated as follows:

$$Y_c = Veq_c = NetVolume \times ((12 - Tc)/30) \times CC;$$

where Tc is the average compartment classification temperature of the compartment and CC is the climate class factor. The values for Tc are set out in Table 7. The values for CC are set out in Table 8.

Table 7

# Temperature classes and corresponding average compartment temperatures (Tc) for ice-cream freezers

| Temperature class                                                                                  |                                                                                               |         |  |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------|--|
| Warmest M-package temperature<br>colder or equal to in all tests (except<br>lid opening test) (°C) | Warmest M-package maximum temper-<br>ature rise allowed during the lid open-<br>ing test (°C) | Tc (°C) |  |
| -18                                                                                                | 2                                                                                             | -18,0   |  |
| -7                                                                                                 | 2                                                                                             | -7,0    |  |

|                                               | Minimum                     |                                     | Maximum                     |                                     |      |
|-----------------------------------------------|-----------------------------|-------------------------------------|-----------------------------|-------------------------------------|------|
|                                               | Ambient<br>temperature (°C) | Ambient<br>relative<br>humidity (%) | Ambient<br>temperature (°C) | Ambient<br>relative<br>humidity (%) | СС   |
| Ice-cream freezer with<br>transparent lid     | 16                          | 80                                  | 30                          | 55                                  | 1,00 |
|                                               |                             |                                     | 35                          | 75                                  | 1,10 |
|                                               |                             |                                     | 40                          | 40                                  | 1,20 |
| Ice-cream freezer with<br>non-transparent lid | 16                          | 80                                  | 30                          | 55                                  | 1,00 |
|                                               |                             |                                     | 35                          | 75                                  | 1,04 |
|                                               |                             |                                     | 40                          | 40                                  | 1,10 |

# Table 8 Operating conditions and corresponding CC values for ice-cream freezers

(c) for refrigerated vending machines:

Y is the net volume of the refrigerated vending machine, which is the sum of the volumes of all compartments within which the products directly available for vending are contained and the volume through which the products pass during the dispensing process, expressed in litres (L) and rounded to the nearest integer.

(d) for all other refrigerating appliances with direct sales function:

 $Y_c$  is the sum of the TDA of all compartments of the same temperature class of the refrigerating appliance with a direct sales function, expressed in square meters (m<sup>2</sup>), and rounded to two decimal places.

(5) The values for P are set out in Table 9.

#### Table 9

#### P values

| Cabinet type                                                | Р    |
|-------------------------------------------------------------|------|
| Integral supermarket cabinets                               | 1,10 |
| Other refrigerating appliances with a direct sales function | 1,00 |

#### ANNEX V

#### **Product information sheet**

Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 10.

Table 10

#### Product information sheet

#### Supplier's name or trademark:

Supplier's address (b):

Model identifier:

Use: Display and sale

#### Type of refrigerating appliance with a direct sales function:

# [Beverage coolers/Ice-cream freezers/Gelato-scooping cabinet/supermarket cabinet/refrigerated vending machines]

| Cabinet family code, according to the harmonised stan-<br>dards or other reliable, accurate and reproducible meth-<br>ods in accordance with Annex IV. | For example: [HC1//HC8], [VC1//VC4] |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| ods in accordance with Annex IV.                                                                                                                       |                                     |

#### Product specific parameters

(Beverage coolers: fill in point 1, ice-cream freezers: fill in point 2, Gelato-scooping cabinet: fill in point 3, supermarket cabinet: fill in point 4, refrigerated vending machines: fill in point 5. If the refrigerating appliance with a direct sales function contains compartments working at different temperatures, or a compartment that can be set to different temperatures, the lines shall be repeated for each compartment or temperature setting):

#### 1. Beverage coolers:

|                          | Ambient conditions for which the appliance is suitable<br>(according to Table 6) |                         |
|--------------------------|----------------------------------------------------------------------------------|-------------------------|
| Gross volume (diff of L) | Warmest temperature (°C)                                                         | Relative<br>humdity (%) |
| X                        | X                                                                                | x                       |
## 2. Ice-cream freezers with [transparent lid/non-transparent lid]:

|                                   | Ambient conditions for which the appliance is suitable (according to Table 8) |         |                             |         |
|-----------------------------------|-------------------------------------------------------------------------------|---------|-----------------------------|---------|
| Net volume (dm <sup>3</sup> or L) | Temperature range (°C)                                                        |         | Relative humidity range (%) |         |
|                                   | minimum                                                                       | maximum | minimum                     | maximum |
| X                                 | X                                                                             | X       | X                           | X       |

#### 3. Gelato-scooping cabinet

| Total display area (m <sup>2</sup> ) | Temperature class (according to Table 4(b)) |
|--------------------------------------|---------------------------------------------|
| X,XX                                 | [G1/G2/G3/L1/L2/L3/S]                       |

# 4. [Integral/Remote] [horizontal/vertical (other than semi-vertical)/semi-vertical/combined] supermarket cabinet, roll-in: [yes/no]:

| Total display area (m <sup>2</sup> ) | Temperature class (according to Table 4(a))       |
|--------------------------------------|---------------------------------------------------|
| X,XX                                 | [refrigerator: [M2/H1/H2/M1]/freezer: [L1/L2/L3]] |

5. Refrigerated vending machines, [refrigerated closed fronted for cans and bottles where the products are held in stacks/refrigerated glass fronted for [can and bottle, confectionery & snack/entirely for perishable food-stuffs]/multi-temperature for [fill in the type of foodstuffs it is intended for]/combination machines consisting of different categories of machine in the same housing and powered by one chiller for [fill in the type of food-stuffs it is intended for]]:

| Volume (dm <sup>3</sup> or L) | Temperature class (according to Table 4(c)) |
|-------------------------------|---------------------------------------------|
| X                             | category [1/2/3/4/6]                        |

## General product parameters:

| Parameter                                                | Value | Parameter                                                                                                                                                                                | Value                            |
|----------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Annual energy<br>consumption<br>(kWh/a) ( <sup>d</sup> ) | X,XX  | Recommended temperature(s) for optimised food storage<br>(°C) (These settings shall not contradict the temperature<br>conditions set out in Annex IV, Table 4, 5 or 6, as<br>applicable) | х                                |
| EEI                                                      | X,X   | Energy efficiency class                                                                                                                                                                  | [A/B/C/D/E/F/G] ( <sup>c</sup> ) |

# Light source parameters (a) (b):

| Type of light source    | [type]              |
|-------------------------|---------------------|
| Energy efficiency class | [A/B/C/D/E/F/G] (°) |

#### Minimum duration of the guarantee offered by the supplier (b):

### Additional information:

The weblink to the supplier's website, where the information in point 3 of Annex II of Commission Regulation (EU) 2019/2024 (<sup>1</sup>) (<sup>b</sup>) is found:

(a) as determined in accordance with Commission Delegated Regulation (EU) 2019/2015 (2).

(b) changes to these items shall not be considered relevant for the purposes of paragraph 4 of Article 4 of Regulation (EU) 2017/1369.

() if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

(<sup>d</sup>) if the refrigerating appliance with a direct sales function has different compartments working at different temperatures, the annual energy consumption of the integrated unit shall be provided. If separate refrigeration systems provide cooling for separate compartments of the same unit, the energy consumption associated with each sub-system shall also be provided where possible.

<sup>(&</sup>lt;sup>1</sup>) Commission Regulation (EU) 2019/2024 of 11 March 2019 laying down ecodesign requirements for refrigerating appliances with a direct sales function pursuant to Directive 2009/125/EC of the European Parliament and of the Council (see page 313 of this Official Journal).

<sup>(&</sup>lt;sup>2)</sup> Commission Delegated Regulation (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012 (see page 68 of this Official Journal)

## 5.12.2019 EN

#### ANNEX VI

#### **Technical documentation**

1. The technical documentation referred to in point 1(d) of Article 3 shall include the following elements:

- (a) the information as set out in Annex V;
- (b) the information as set out in Table 11;

# Table 11

## Additional information to be included in the technical documentation

A general description of the refrigerating appliance with direct sales function model, sufficient for it to be unequivocally and easily identified:

## Product specifications

#### General product specifications:

| Parameter                             | Value | Parameter                                       | Value         |
|---------------------------------------|-------|-------------------------------------------------|---------------|
| Annual energy consumption<br>(kWh/a)  | X,XX  | Standard annual energy con-<br>sumption (kWh/a) | x,xx          |
| Daily energy consumption<br>(kWh/24h) | x,xxx | Ambient conditions                              | [Set 1/Set 2] |
| M                                     | X,X   | Ν                                               | x,xxx         |
| Temperature coefficient (C)           | X,XX  | Y                                               | X,XX          |
| P                                     | X,XX  |                                                 |               |
| Climate class factor (CC) (ª)         | X,XX  | Target temperature (Tc) (°C) (ª)                | X,X           |

## Additional information:

The references of the harmonised standards or other reliable accurate and reproducible methods applied:

Where appropriate, identification and signature of the person empowered to bind the supplier:

A list of equivalent models, including model identifiers:

(a) Only for beverage coolers and ice-cream freezers

- 2. Where the information included in the technical documentation for a particular model has been obtained:
  - (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer; or

(b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

#### ANNEX VII

# Information to be provided in visual advertisements, in technical promotional material or other promotional material, in distance selling except distance selling on the internet

- 1. In visual advertisements for refrigerating appliances with a direct sales function, for the purposes of ensuring conformity with the requirements laid down in point 1(e) Article 3 and point (c) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- In technical promotional material or other promotional material for refrigerating appliances with a direct sales function, for the purposes of ensuring conformity with the requirements laid down in point 1(f) Article 3 and point (d) of Article 4 the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
- 3. Any paper based distance selling of refrigerating appliances with a direct sales function must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in point 4 of this Annex.
- 4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:(a) an arrow containing the letter of the energy efficiency class, in white, Calibri Bold and in a font size at least equivalent to that of the price, if the price is shown, in all other cases clearly visible and legible font size;
  - (b) the colour of the arrow matching the colour of the energy efficiency class;
  - (c) the range of available energy efficiency classes in 100 % black; and
  - (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in black around the arrow and the letter of the energy efficiency class.

By derogation, if the visual advertisement, technical promotional material or other promotional material or paper based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material, other promotional material or paper based distance selling.

Figure 1

#### Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



- 5. Telemarketing based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the full label and the product information sheet through a free access website, or by requesting a printed copy.
- 6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

#### ANNEX VIII

#### Information to be provided in the case of distance selling through the internet

- 1. The appropriate label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product, if the price is shown, and in all other cases in proximity to the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 4 of Annex III. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
- 2. The image used for accessing the label in the case of a nested display, as indicated in Figure 2, shall:
  - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
  - (b) indicate the energy efficiency class of the product on the arrow in white, Calibri Bold and in a font size equivalent to that of the price, if the price is shown, in all other cases a clearly visible and legible font size; and
  - (c) have the range of available energy efficiency classes in 100 % black; and,
  - (d) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

#### Figure 2

#### Coloured left/right arrow example, with range of energy classes indicated



- 3. In the case of a nested display, the sequence of display of the label shall be as follows:
  - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product, if the price is shown, and in all other cases in proximity to the product;
  - (b) the image shall link to the label set out in Annex III;
  - (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
  - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
  - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
  - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
  - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price, if the price is shown, and in all other cases a clearly visible and legible font size.
- 4. The electronic product information sheet made available by suppliers in accordance with point 1(h) of Article 3 shall be shown on the display mechanism in proximity to the price of the product, if the price is shown, and in all other cases in proximity to the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

#### ANNEX IX

#### Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product fiche shall not be more favourable for the supplier than the values reported in the technical documentation.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation, the authorities of the Member States shall apply the following procedure:

- (1) The Member State authorities shall verify one single unit of the model.
- (2) The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 3 of Article 3 of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
  - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class is not more favourable for the supplier than the class determined by the declared values; and
  - (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 12.
- (3) If the results referred to in points 2(a) and (b) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- (5) The model shall be considered to comply with the applicable requirements if for these three units, the arithmetical mean of the determined values complies with the respective tolerances given in Table 12.
- (6) If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (7) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay once a decision has been taken on the non-compliance of the model according to points 3 and 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex IV.

The Member State authorities shall only apply the verification tolerances set out in Table 12 and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 12, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

# Verification tolerances for measured parameters

| Parameters                                                  | Verification tolerances                                                                                                      |  |  |
|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--|--|
| Net volume, and net compartment volume where applicable     | The determined value (ª) shall not be more than 3 % or 1 L lower — whichever is the greater value — than the declared value. |  |  |
| Gross volume, and gross compartment volume where applicable | The determined value (ª) shall not be more than 3 % or 1 L lower — whichever is the greater value — than the declared value  |  |  |
| TDA, and compartment TDA where applicable                   | The determined value ( <sup>a</sup> ) shall not be more than 3 % lower than the declared value.                              |  |  |
| <i>E</i> <sub>daily</sub>                                   | The determined value (ª) shall not be more than 10 % higher than the declared value                                          |  |  |
| AE                                                          | The determined value (a) shall not be more than 10 % higher than the declared value.                                         |  |  |

(<sup>a</sup>) in the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

#### **COMMISSION REGULATION (EU) 2019/2019**

#### of 1 October 2019

laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 643/2009

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (1), and in particular Article 15(1) thereof.

Whereas:

- (1)Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- The Communication from the Commission COM(2016) 773 (2) (ecodesign working plan) established by the (2) Commission in application of Article 16(1) of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Commission Regulation (EC) No 643/2009 (3) and Commission Delegated Regulation (EU) No 1060/2010 (4).
- (3) Measures from the ecodesign working plan have an estimated potential to deliver a total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Refrigerating appliances is one of the product groups listed in the ecodesign working plan, with an estimated 10 TWh of annual final energy savings in 2030.
- The Commission established ecodesign requirements for household refrigerating appliances in Regulation (EC) (4) No 643/2009 and pursuant to that Regulation, the Commission should regularly review the Regulation in the light of technological progress.
- The Commission has reviewed Regulation (EC) No 643/2009 and analysed the technical, environmental and eco-(5) nomic aspects of refrigerating appliances as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- (6) The review shows the benefit of continued and improved requirements, adapted to the technological progress of refrigerating appliances. Specifically, it shows that energy efficiency requirements for wine storage appliances can be introduced and that correction factors can be eliminated or significantly reduced.
- (7) The annual energy consumption of products subject to this Regulation in the Union was estimated at 86 TWh in 2015, corresponding to 34 million tonnes of  $CO_2$  equivalent greenhouse gas emissions. The energy consumption of refrigerating appliances in a business-as-usual scenario is projected to decrease by 2030. However, this decrease is expected to slow down unless the existing ecodesign requirements are updated.

<sup>(1)</sup> OJ L 285, 31.10.2009, p. 10.

 <sup>(&</sup>lt;sup>2</sup>) Communication from the Commission. Ecodesign working plan 2016-2019, COM(2016) 773 final, 30.11.2016.
(<sup>3</sup>) Commission Regulation (EC) No 643/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for household refrigerating appliances (OJ L 191, 23.7.2009, p. 53).

Commission Delegated Regulation (EU) No 1060/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household refrigerating appliances (OJ L 314, 30.11.2010, p. 17).

- (8) The environmental aspects of the refrigerating appliances in the scope of this Regulation that have been identified as significant for the purposes of this Regulation are energy consumption in the use phase, increased energy use over the product life due to leaking door gaskets, poor reparability and suboptimal food preservation options resulting in avoidable food waste.
- (9) The Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2015) 614 final (<sup>5</sup>) (circular economy action plan) and the ecodesign working plan underline the importance of using the ecodesign framework to support the move towards a more resource efficient and circular economy. Directive 2012/19/EU of the European Parliament and of the Council (<sup>6</sup>) refers to Directive 2009/125/EC and indicates that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste electrical and electronic equipment (WEEE) by tackling the issues upstream. This Regulation should therefore lay down appropriate requirements for this.
- (10) Refrigerating appliances with a direct sales function should be subject to a separate ecodesign regulation.
- (11) Chest freezers, including professional chest freezers, should be in the scope of this Regulation, as they are out of the scope of the Commission Regulation (EU) 2015/1095 (<sup>7</sup>) and can be used in other environments than professional environments.
- (12) Wine storage appliances and low noise refrigerating appliances (such as minibars), including those with transparent doors, do not have a direct sales function. Wine storage appliances are usually either used in household environments or in restaurants, whereas minibars are usually used in hotel rooms. Therefore, wine storage appliances and minibars, including those with transparent doors should be covered by this Regulation.
- (13) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>8</sup>).
- (14) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (15) To facilitate compliance checks, manufacturers, importers or authorised representatives should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation.
- (16) For market surveillance purposes, manufacturers, importers or authorised representatives should be allowed to refer to the product database if the technical documentation as per Commission Delegated Regulation (EU) 2019/2016 (<sup>9</sup>) contains the same information.
- (17) To improve the effectiveness of this Regulation and to protect consumers, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited.
- (18) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on the products' environmental performance over their life cycle subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex I, part 3, point (2).

<sup>&</sup>lt;sup>(5)</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Closing the loop — An EU action plan for the circular economy, COM(2015) 614 final, 2.12.2015.

<sup>(&</sup>lt;sup>6</sup>) Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38).

<sup>(7)</sup> Commission Regulation (EU) 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers (OJ L 177, 8.7.2015, p. 19).

<sup>(8)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(&</sup>lt;sup>9</sup>) Commission Delegated Regulation (EU) 2019/2016 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances and repealing Commission Delegated Regulation (EU) No 1060/2010 (see page 102 of this Official Journal).

- (19) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should allow for all provisions to be implemented and show an effect on the market.
- (20) Regulation (EC) No 643/2009 should therefore be repealed.
- (21) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

#### Article 1

## Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market of or the putting into service of electric mains-operated refrigerating appliances with a total volume of more than 10 litres and less than or equal to 1 500 litres.

- 2. This Regulation does not apply to:
- (a) professional refrigerated storage cabinets and blast cabinets, with the exception of professional chest freezers;
- (b) refrigerating appliances with a direct sales function;
- (c) mobile refrigerating appliances;
- (d) appliances where the primary function is not the storage of foodstuffs through refrigeration.

#### Article 2

#### Definitions

For the purpose of this Regulation, the following definitions shall apply:

- (1) 'mains' or 'electric mains' means the electricity supply from the grid of 230 (± 10 %) volt of alternating current at 50 Hz;
- (2) 'refrigerating appliance' means an insulated cabinet with one or more compartments that are controlled at specific temperatures, cooled by natural or forced convection whereby the cooling is obtained by one or more energy consuming means;
- (3) 'compartment' means an enclosed space within a refrigerating appliance, separated from other compartment(s) by a partition, container, or similar construction, which is directly accessible through one or more external doors and may itself be divided into sub-compartments. For the purpose of this Regulation, unless specified otherwise, compartment refers to both compartments and sub-compartments;
- (4) 'external door' is the part of a cabinet that can be moved or removed to at least allow the load to be moved from the exterior to the interior or from the interior to the exterior of the cabinet;
- (5) 'sub-compartment' means an enclosed space in a compartment having a different operating temperature range from the compartment in which it is located;
- (6) 'total volume' (V) means the volume of the space within the inside liner of the refrigerating appliance, equal to the sum of the compartment volumes, expressed in dm<sup>3</sup> or litres;
- (7) 'compartment volume' (V<sub>c</sub>) means the volume of the space within the inside liner of the compartment, expressed in dm<sup>3</sup> or litres;
- (8) 'professional refrigerated storage cabinet' means an insulated refrigerating appliance integrating one or more compartments accessible via one or more doors or drawers, capable of continuously maintaining the temperature of foodstuffs within prescribed limits at chilled or frozen operating temperature, using a vapour compression cycle, and used for the storage of foodstuffs in non-household environments but not for the display to or access by customers, as defined in Regulation (EU) 2015/1095;

- (9) 'blast cabinet' means an insulated refrigerating appliance primarily intended to rapidly cool hot foodstuffs to below 10 °C in the case of chilling and below 18 °C in the case of freezing, as defined in Regulation (EU) 2015/1095;
- (10) 'professional chest freezer' means a freezer in which the compartment(s) is accessible from the top of the appliance or which has both top-opening type and upright type compartments but where the gross volume of the top-opening type compartment(s) exceeds 75 % of the total gross volume of the appliance, used for the storage of foodstuffs in non-household environments;
- (11) 'freezer' means a refrigerating appliance with only 4-star compartments;
- (12) 'frozen compartment' means a compartment type with a target temperature equal to or below 0 °C; that is a 0-star, 1-star, 2-star, 3-star or 4-star compartment, as set out in Annex III, Table 3;
- (13) 'compartment type' means the declared compartment type in accordance with the refrigerating performance parameters  $T_{min}$ ,  $T_{max}$ ,  $T_c$  and others set out in Annex III, Table 3;
- (14) 'minimum temperature' ( $T_{min}$ ) means the minimum temperature inside a compartment during storage testing, as set out in Annex III, Table 3;
- (15) 'maximum temperature' ( $T_{max}$ ) means the maximum temperature inside a compartment during storage testing, as set out in Annex III, Table 3;
- (16) 'target temperature' (T<sub>c</sub>) means the reference temperature inside a compartment during testing, as set out in Annex III, Table 3, and is the temperature for testing energy consumption expressed as the average over time and over a set of sensors;
- (17) '0-star compartment' and 'ice-making compartment' means a frozen compartment with a target temperature and storage conditions of 0 °C, as set out in Annex III, Table 3;
- (18) '1-star compartment' means a frozen compartment with a target temperature and storage conditions of 6 °C, as set out in Annex III, Table 3;
- (19) '2-star compartment' means a frozen compartment with a target temperature and storage conditions of 12 °C, as set out in Annex III, Table 3;
- (20) '3-star compartment' means a frozen compartment with a target temperature and storage conditions of 18 °C, as set out in Annex III, Table 3;
- (21) 'freezer compartment' or '4-star compartment' means a frozen compartment with a target temperature and storage conditions of 18 °C and which fulfils the requirements for the freezing capacity;
- (22) 'freezing capacity' means the amount of fresh foodstuffs that can be frozen in a freezer compartment in 24 h; it shall not be lower than 4,5 kg per 24 h per 100 litres of volume of the freezer compartment, with a minimum of 2,0 kg/24 h;
- (23) 'refrigerating appliance with a direct sales function' means a refrigerating appliance used for the functions of displaying and selling items at specified temperatures below the ambient temperature to customers, accessible directly through open sides or via one or more doors or drawers, or both, including also cabinets with areas used for storage or assisted serving of items not accessible by the customers and excluding minibars and wine storage appliances, as defined in Commission Regulation (EU) 2019/2024 (<sup>10</sup>);
- (24) 'minibar' means a refrigerating appliance with a total volume of maximum 60 litres, which is primary intended for the storage and sales of foodstuffs in hotel rooms and similar premises;

<sup>(10)</sup> Commission Regulation (EU) 2019/2024 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances with a direct sales function pursuant to Directive 2009/125/EC of the European Parliament and of the Council (see page 313 of this Official Journal).

- (25) 'wine storage appliance' means a dedicated refrigerating appliance for the storage of wine, with precision temperature control for the storage conditions and target temperature of a wine storage compartment, as defined in Annex III, Table 3, and equipped with anti-vibration measures;
- (26) 'dedicated refrigerating appliance' means a refrigerating appliance with only one type of compartment;
- (27) 'wine storage compartment' means an unfrozen compartment with a target temperature of 12 °C, an internal humidity range from 50 % to 80 % and storage conditions ranging from 5 °C to 20 °C, as defined in Annex III, Table 3;
- (28) 'mobile refrigerating appliance' means a refrigerating appliance that can be used where there is no access to the mains electricity grid and that uses extra low-voltage electricity (< 120V DC) or fuel or both as the energy source for the refrigeration functionality, including a refrigerating appliance that, in addition to extra low voltage electricity or fuel, or both, can be electric mains operated. An appliance placed on the market with an AC/DC converter is not a mobile refrigerating appliance;
- (29) 'foodstuffs' means food, ingredients, beverages, including wine, and other items primarily used for consumption which require refrigeration at specified temperatures;
- (30) 'energy efficiency index' (EEI) means an index number for the relative energy efficiency of a refrigeration appliance expressed in percentage, as set out in point 5 of Annex III;
- (31) 'low noise refrigerating appliance' means a refrigerating appliance without vapour compression and with airborne acoustical noise emission lower than 27 A-weighted decibel referred to 1 pico watt (dB(A) re 1 pW);
- (32) 'airborne acoustical noise emission' means the sound power level of a refrigerating appliance, expressed in A-weighted decibel referred to 1 pico watt (dB(A) re 1 pW);
- (33) 'combi appliance' means a refrigerating appliance that has more than one compartment type of which at least one is an unfrozen compartment;
- (34) 'unfrozen compartment' means a compartment type with a target temperature equal to or above 4 °C; that is a pantry, wine storage, cellar or fresh food compartment with storage conditions and target temperatures, as set out in Annex III, Table 3;
- (35) 'pantry compartment' means an unfrozen compartment with a target temperature of 17 °C and storage conditions ranging from 14 °C to 20 °C, as set out in Annex III, Table 3;
- (36) 'cellar compartment' means an unfrozen compartment with a target temperature of 12 °C and storage conditions ranging from 2 °C to 14 °C, as set out in Annex III, Table 3;
- (37) 'fresh food compartment' means an unfrozen compartment with a target temperature of 4 °C and storage conditions ranging from 0 °C and 8 °C, as set out in Annex III, Table 3;
- (38) 'ambient controlled anti-condensation heater' means an anti-condensation heater where the heating capacity depends on either the ambient temperature or the ambient humidity or both;
- (39) 'anti-condensation heater' means a heater which prevents condensation on the refrigeration appliance;
- (40) 'auxiliary energy' ( $E_{aux}$ ) means the energy used by an ambient controlled anti-condensation heater, expressed in kWh/a.

For the purposes of the Annexes, additional definitions are set out in Annex I.

#### Article 3

#### **Ecodesign requirements**

The ecodesign requirements set out in Annex II shall apply from the dates indicated therein.

#### Article 4

#### Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain a copy of the product information provided in accordance with point 4 of Annex II, and the details and the results of the calculations set out in Annex III to this Regulation.

- 3. Where the information included in the technical documentation for a particular model has been obtained:
- (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer, or
- (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

4. The technical documentation shall include the information in the order and as set out in Annex VI of Regulation (EU) 2019/2016. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to Annex IV, point 2(g) of Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Regulation (EU) 2019/2016.

#### Article 5

#### Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IV when performing the market surveillance checks referred to in point 2 of Article 3 of Directive 2009/125/EC.

#### Article 6

## Circumvention

The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any of the documentation provided.

The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to update.

#### Article 7

## Indicative benchmarks

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

#### Article 8

#### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this assessment, including, if appropriate, a draft revision proposal, to the Consultation Forum by 25 December 2025.

This review shall in particular assess:

- (a) the energy efficiency index requirements for low noise refrigerating appliances and for wine storage appliances, including those with transparent doors;
- (b) the appropriateness to set energy efficiency index requirements for low noise combi appliances with frozen compartment(s);
- (c) the treatment of professional chest freezers;
- (d) the level of the tolerances;
- (e) the appropriateness of a mandatory sound signal for long door openings;
- (f) the compensation factors and the modelling parameters;
- (g) the appropriateness to set additional resource efficiency requirements for products in accordance with the principles of the circular economy, including whether more spare parts should be included;
- (h) the appropriateness of including other auxiliary devices or functions than the ambient controlled anti-condensation heater in the determination of the auxiliary energy;
- (i) the methodology for taking automatic and intelligent defrosting into account.

#### Article 9

#### Repeal

Commission Regulation (EC) No 643/2009 shall be repealed with effect from 1 March 2021.

#### Article 10

#### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 6 shall apply from 25 December 2019.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 1 October 2019.

For the Commission The President Jean-Claude JUNCKER

#### ANNEX I

#### Definitions applicable for the Annexes

The following definitions shall apply:

- (1) 'transparent door(s)' means external door(s) made of a transparent material that allows the end-user to see items through it, at least 75 % of the internal cabinet height and 75 % of the internal cabinet width shall be transparent, both measured at the front of the cabinet;
- (2) 'fast freeze' means a feature that can be activated by the end-user according to the manufacturer's, the importer's or authorised representative's instructions, which decreases the storage temperature of freezer compartment(s) to achieve a faster freezing of unfrozen foodstuffs;
- (3) 'winter setting' means a control feature for a combi appliance with one compressor and one thermostat, which according to the manufacturer's, importer's or authorised representative's instructions can be used in ambient temperatures below +16 °C, consisting of a switching device or function that guarantees, even if it would not be required for the compartment where the thermostat is located, that the compressor keeps on working to maintain the proper storage temperatures in the other compartments;
- (4) 'chill compartment' means a compartment which is able to control its average temperature within a certain range without user-adjustments of its control, with a target temperature equal to 2 °C and storage conditions ranging from - 3 °C to 3 °C, as set out in Annex III, Table 3;
- (5) 'vacuum insulation panel' (VIP) means an insulation panel consisting of a firm, highly-porous material encased in a thin, gas-tight outer envelope, from which the gases are evacuated and which is sealed to prevent outside gases from entering the panel;
- (6) '2-star section' means part of a 3-star or 4-star compartment which does not have its own individual access door or lid and with a target temperature and storage conditions of 12 °C;
- (7) 'door gasket' means a mechanical seal which fills the space between the door and the cabinet of the refrigerating appliance to prevent leakage from the cabinet to the outdoor air;
- (8) 'spare part' means a separate part that can replace a part with the same or similar function in a product;
- (9) 'professional repairer' means an operator or undertaking which provides services of repair and professional maintenance of refrigerating appliances;
- (10) 'freestanding appliance' means a refrigerating appliance that is not a built-in appliance;
- (11) 'built-in appliance' means a refrigerating appliance that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top, bottom and sides) by panels; and
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;
- (12) 'guarantee' means any undertaking by the retailer or a manufacturer, importer or authorised representative to the consumer to:
  - (a) reimburse the price paid; or
  - (b) replace, repair or handle refrigerating appliances in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising;
- (13) 'climate class' means the range of ambient temperatures, as set out in point 1(i) of Annex III, in which the refrigerating appliances are intended to be used, and for which the required storage temperatures specified in Annex III, Table 3 are met simultaneously in all compartment(s);

- (14) 'product database' means a collection of data concerning products, which is arranged in a systematic manner and consists of a consumer-oriented public part, where information concerning individual product parameters is accessible by electronic means, an online portal for accessibility and a compliance part, with clearly specified accessibility and security requirements, as laid down in Regulation (EU) 2017/1369 of the European Parliament and of the Council (<sup>1</sup>);
- (15) 'annual energy consumption' (AE) means the average daily energy consumption multiplied by 365 (days per year), expressed in kilowatt hour per year (kWh/a), as calculated in accordance with point 3 of Annex III;
- (16) 'daily energy consumption' ( $E_{daily}$ ) means the electricity used by a refrigerating appliance over 24 hours at reference conditions, expressed in kilowatt hour per 24 hours (kWh/24 h), as calculated in accordance with point 3 of Annex III;
- (17) 'dispenser' means a device that dispenses chilled or frozen load on demand from a refrigerating appliance, such as ice-cube dispensers or chilled water dispensers;
- (18) 'variable temperature compartment' means a compartment intended for use as two (or more) alternative compartment types (for example a compartment that can be either a fresh food compartment or freezer compartment) and which is capable of being set by a user to continuously maintain the operating temperature range applicable for each declared compartment type. A compartment intended for use as a single compartment type that can also meet storage conditions of other compartment types (for example a chill compartment that may also fulfil 0-star requirements) is not a variable temperature compartment;
- (19) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (20) 'steady-state power consumption' (P<sub>ss</sub>) means the average power consumption in steady-state conditions, expressed in watt (W);
- (21) 'incremental defrost and recovery energy consumption' ( $\Delta E_{d-f}$ ) means the extra average energy consumption for a defrost and recovery operation, expressed in watt hour (Wh);
- (22) 'auto-defrost' means a feature by which compartments are defrosted without user intervention to initiate the removal of frost accumulation at all temperature-control settings or to restore normal operation, and the disposal of the defrosted water is automatic;
- (23) 'defrost interval'  $(t_{d-j})$  means the representative average interval, expressed in hour (h), between one time of activation of the defrost heater and the next in two subsequent defrost and recovery cycles; or if there is no defrost heater one time of deactivation of the compressor and the next in two subsequent defrost and recovery cycles;
- (24) 'defrost and recovery period' means the period from the initiation of a defrost control cycle until stable operating conditions are re-established;
- (25) 'defrosting type' means the method to remove frost accumulation on the evaporator(s) of a refrigerating appliance; that is auto-defrost or manual defrost;
- (26) 'manual defrost' means not having an auto-defrost function;
- (27) 'load factor' (L) means a factor accounting for the extra (beyond what is already anticipated through the higher average ambient temperature for testing) cooling load from introducing warm foodstuffs, with values as set out in point 3(a) of Annex III;
- (28) 'standard annual energy consumption' (SAE) means the reference annual energy consumption of a refrigerating appliance, expressed in kilowatt hour per year (kWh/a), as calculated in accordance with point 4 of Annex III;

<sup>(&</sup>lt;sup>1</sup>) Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1).

- (29) 'combi parameter' (C) means a modelling parameter that takes into account the synergy effect when different compartment types are combined in one appliance, with values as set out in Annex III, Table 4;
- (30) 'door heat loss factor' (D) means a compensation factor for combi appliances according to the number of different temperature compartments or the number of external doors, whichever is lower and as set out in Annex III, Table 5. For this factor, 'compartment' does not refer to sub-compartment;
- (31) 'defrost factor' (A<sub>c</sub>) means a compensation factor that takes into account whether the refrigerating appliance has an auto-defrost or a manual defrost, with values as set out in Annex III, Table 5;
- (32) 'built-in factor' ( $B_c$ ) means a compensation factor that takes into account whether the refrigerating appliance is built-in or freestanding, with values as set out in Annex III, Table 5;
- (33)  $M_c$  and  $N_c$  means modelling parameters that take into account the volume-dependence of the energy use, with values as set out in Annex III, Table 4;
- (34) 'thermodynamic parameter' (*r<sub>c</sub>*) means a modelling parameter which corrects the standard annual energy consumption to an ambient temperature of 24 °C, with values as set out in Annex III, Table 4;
- (35) 'equivalent model' means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;
- (36) 'model identifier' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same supplier's name;
- (37) 'refrigerator-freezer' means a combi appliance that has at least one freezer compartment and at least one fresh food compartment.

#### ANNEX II

#### **Ecodesign requirements**

- 1. Energy efficiency requirements:
- (a) From 1 March 2021, the energy efficiency index (EEI) of refrigerating appliances shall not be above the values as set out in Table 1.

#### Table 1

#### Maximum EEI for refrigerating appliances, expressed in %

|                                                                                                                      | EEI |
|----------------------------------------------------------------------------------------------------------------------|-----|
| dedicated low noise refrigerating appliances with fresh food compartment(s)                                          | 375 |
| low noise refrigerating appliances with transparent doors                                                            | 380 |
| other low noise refrigerating appliances, with the exception of low noise combi appliances with a frozen compartment | 300 |
| wine storage appliances with transparent doors                                                                       | 190 |
| other wine storage appliances                                                                                        | 155 |
| all other refrigerating appliances, with the exception of low noise combi appliances with a frozen compartment       | 125 |

(b) From 1 March 2024, the EEI of refrigerating appliances shall not be above the values set out in Table 2.

## Table 2

## Maximum EEI for refrigerating appliances, expressed in %

|                                                                                                                      | EEI |
|----------------------------------------------------------------------------------------------------------------------|-----|
| dedicated low noise refrigerating appliances with fresh food compartment(s)                                          | 312 |
| low noise refrigerating appliances with transparent door(s)                                                          | 300 |
| other low noise refrigerating appliances, with the exception of low noise combi appliances with a frozen compartment | 250 |
| wine storage appliances with transparent door(s)                                                                     | 172 |
| other wine storage appliances                                                                                        | 140 |
| all other refrigerating appliances, with the exception of low noise combi appliances with a frozen compartment       | 100 |

#### 2. Functional requirements:

From 1 March 2021, refrigerating appliances shall meet the following requirements:

- (a) Any fast freeze facility, or any similar function achieved through modification of the temperature settings in freezer compartments, shall, once activated by the end-user according to the manufacturer's, the importer's or authorised representative's instructions, automatically revert to the previous normal storage conditions after no more than 72 hours.
- (b) Winter settings shall be automatically activated or de-activated according to the need to maintain the frozen compartment(s) at the correct temperature.

- (c) Each compartment shall be marked with the appropriate identification symbol. For the frozen compartments this shall be the number of stars of the compartment. For the chill and unfrozen compartments, this shall be an indication, chosen by the manufacturer, the importer or authorised representative, of the type of food that should be stored in the compartment.
- (d) If the refrigerating appliance contains vacuum insulation panels, the refrigerating appliance shall be labelled with the letters 'VIP' in a clearly visible and readable way.
- (e) For 2-star sub-compartments or 2-star sections:
  - a 2-star sub-compartment or 2-star section is separated from the 3-star or 4-star volume by a partition, container, or similar construction;
  - the volume of the 2-star sub-compartment or 2-star section does not exceed 20% of the total volume of the containing compartment.
- (f) For 4-star compartments, the specific freezing capacity shall be such that the freezing time to bring the temperature of the light load (3,5 kg/100 l) from +25 to 18 °C at an ambient temperature of 25 °C, is smaller than or equal to 18,5 h.

Until 1 March 2024, the requirements laid down in points 2(a) and (b) shall not apply to combi appliances with one electromechanical thermostat and one compressor which are not equipped with an electronic control board.

3. Resource efficiency requirements:

From 1 March 2021, refrigerating appliances shall meet the following requirements:

- (a) Availability of spare parts:
  - (1) manufacturers, importers or authorised representatives of refrigerating appliances shall make available to professional repairers at least the following spare parts: thermostats, temperature sensors, printed circuit boards and light sources, for a minimum period of seven years after placing the last unit of the model on the market;
  - (2) manufacturers, importers or authorised representatives of refrigerating appliances shall make available to professional repairers and end-users at least the following spare parts: door handles, door hinges, trays and baskets for a minimum period of seven years and door gaskets for a minimum period of 10 year, after placing the last unit of the model on the market;
  - (3) manufacturers shall ensure that these spare parts can be replaced with the use of commonly available tools and without permanent damage to the appliance;
  - (4) the list of spare parts concerned by point (1) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts;
  - (5) the list of spare parts concerned by point (2) and the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.
- (b) Access to repair and maintenance information:

After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, and until the end of the period mentioned under (a), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:

- (1) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers, importers or authorised representative may require the professional repairer to demonstrate that:
  - (i) the professional repairer has the technical competence to repair refrigerating appliances and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
  - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity, regardless of whether this is required by the Member State;

- (2) the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request by the professional repairer;
- (3) manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information;

Once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The available repair and maintenance information shall include:

- the unequivocal appliance identification;
- a disassembly map or exploded view;
- list of necessary repair and test equipment;
- component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- wiring and connection diagrams;
- diagnostic fault and error codes (including manufacturer-specific codes, where applicable); and
- data records of reported failure incidents stored on the refrigerating appliance (where applicable).
- (c) Maximum delivery time of spare parts:
  - (1) during the period mentioned under point 3(a)(1) and point 3(a)(2), the manufacturer, importer or authorised representatives shall ensure the delivery of the spare parts for refrigerating appliances within 15 working days after having received the order;
  - (2) in the case of spare parts available only to professional repairers this availability may be limited to professional repairers registered in accordance with point b.
- (d) Requirements for dismantling for material recovery and recycling while avoiding pollution:
  - (1) manufacturers, importers or authorised representatives shall ensure that refrigerating appliances are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed with the use of commonly available tools;
  - (2) manufacturers, importers and authorised representatives shall fulfil the obligations laid down in Point 1 of Article 15 of Directive 2012/19/EU.
- 4. Information requirements:

From 1 March 2021, instruction manuals for installers and end-users, and free access website of manufacturers, importers or authorised representatives shall include the following information:

- (a) the combination of drawers, baskets and shelves that result in the most efficient use of energy for the refrigerating appliance;
- (b) clear guidance about where and how to store foodstuffs in a refrigerating appliance for best preservation over the longest period, to avoid food waste;
- (c) the recommended setting of temperatures in each compartment for optimum food preservation. These settings shall not contradict the storage conditions set out in Annex III, Table 3;

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- (d) an estimation of the impact of temperature settings on food waste;
- (e) a description of the effects of special modes and features, and in particular how temperatures are affected in each compartment and for how long;
- (f) for wine storage appliances: 'this appliance is intended to be used exclusively for the storage of wine'. This shall not apply to refrigerating appliances that are not specifically designed for wine storage but may be used for this purpose, or to refrigerating appliances that have a wine storage compartment combined with any other compartment type;
- (g) instructions for the correct installation and end-user maintenance, including cleaning, of the refrigerating appliance;
- (h) for a freestanding appliance: 'this refrigerating appliance is not intended to be used as a built-in appliance';
- (i) for appliances without a 4-star compartment: 'this refrigerating appliance is not suitable for freezing foodstuffs';
- (j) access to professional repair, such as internet webpages, addresses, contact details;
- (k) relevant information for ordering spare parts, directly or through other channels provided by the manufacturer, importer or authorised representative;
- (l) the minimum period during which spare parts, necessary for the repair of the appliance, are available;
- (m) the minimum duration of the guarantee of the refrigerating appliance offered by the manufacturer, importer or authorised representative;
- (n) for refrigerating appliances with climate class:
  - extended temperate: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 10 °C to 32 °C';
  - temperate: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 16 °C to 32 °C';
  - subtropical: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 16 °C to 38 °C';
  - tropical: 'this refrigerating appliance is intended to be used at ambient temperatures ranging from 16 °C to 43 °C';
- (o) instruction on how to find the model information in the product database, as defined in Regulation (EU) 2019/2016 by means of a weblink that links to the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.

#### ANNEX III

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, or other reliable, accurate and reproducible methods, which takes into account the generally recognised state-of-the-art methods and are in line with the provisions set out below. The reference numbers of these harmonised standards have been published for this purpose in the *Official Journal of the European Union*:

- 1. General conditions for testing:
- (a) for refrigerating appliances with anti-condensation heaters that can be switched on and off by the end-user, the anticondensation heaters shall be switched on and — if adjustable — set at maximum heating and included in the annual energy consumption (AE) as daily energy consumption ( $E_{daily}$ );
- (b) for refrigerating appliances with ambient controlled anti-condensation heaters, the ambient controlled electric anticondensation heaters shall be switched off or otherwise disabled, where possible, during the measurement of energy consumption;
- (c) for refrigerating appliances with dispensers that can be switched on and off by the end-user, the dispensers shall be switched on during the energy consumption test but not operating;
- (d) for the measurement of energy consumption, variable temperature compartments shall operate at the lowest temperature that can be set by the end-user to continuously maintain the temperature range, as set out in Table 3, of the compartment type which has the lowest temperature;
- (e) for refrigerating appliances that can be connected to a network, the communication module shall be activated but there is no need to have a specific type of communication or data exchange or both during the energy consumption test. During the energy consumption test it has to be ensured that the unit is connected to a network;
- (f) for the performance of chill compartments:
  - (1) for a variable temperature compartment rated as a fresh food and/or chill compartment, the energy efficiency index (EEI) shall be determined for each temperature condition and the highest value shall be applied;
  - (2) a chill compartment shall be able to control its average temperature within a certain range without user-adjustments of its control, this can be verified during the energy consumption tests at 16 °C and 32 °C ambient temperature;
- (g) for adjustable volume compartments, when the volumes of two compartments are adjustable relative to one another by the end-user, the energy consumption and the volume shall be tested when the volume of the compartment with the higher target temperature is adjusted to its minimum volume;
- (h) the specific freezing capacity is calculated as 12 times the light load weight, divided by the freezing time to bring the temperature of the light load from +25 to -18 °C at an ambient temperature of 25 °C expressed in kg/12 h and rounded to one decimal place; the light load weight is 3,5 kg per 100 litre of the compartment volume of the frozen compartments, and shall be at least 2,0 kg;
- (i) for the determination of the climate classes, the acronym for the ambient temperature range, that is SN, N, ST or T:
  - (1) the extended temperate (SN) has a temperature range from 10 °C to 32 °C;
  - (2) the temperate (N) has a temperature range from 16 °C to 32 °C;
  - (3) the subtropical (ST) has a temperature range from 16 °C to 38 °C; and
  - (4) the tropical (T) has a temperature range from 16  $^{\circ}$ C to 43  $^{\circ}$ C.

2. Storage conditions and target temperatures per compartment type:

Table 3 sets out the storage conditions and target temperature per compartment type.

- 3. Determination of the AE:
- (a) For all refrigerating appliances, except for low noise refrigerating appliances:

The energy consumption shall be determined by testing at an ambient temperature of 16 °C and 32 °C.

To determine the energy consumption, the average air temperatures in each compartment shall be equal to or below the target temperatures specified in Table 3 for each compartment type claimed by the manufacturer, the importer or authorised representative. Values above and below target temperatures may be used to estimate the energy consumption at the target temperature for each relevant compartment by interpolation, as appropriate.

The main components of energy consumption to be determined are:

- a set of steady state power consumption values ( $P_{ss}$ ), expressed in W and rounded to one decimal place, each at a specific ambient temperature and at a set of compartment temperatures, which are not necessarily the target temperatures;
- the representative incremental defrost and recovery energy consumption  $(\Delta E_{d-j})$ , expressed in Wh and rounded to one decimal place, for products with one or more auto-defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16 °C ( $\Delta E_{d-f16}$ ) and 32 °C ( $\Delta E_{d-f32}$ );
- defrost interval  $(t_{d-j})$ , expressed in h and rounded to three decimal places, for products with one or more defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16 °C  $(t_{d-f16})$  and 32 °C  $(t_{d-f22})$ .  $t_{d-f}$  shall be determined for each system under a certain range of conditions;
- for each test performed the  $P_{ss}$  and  $\Delta E_{d:f}$  are added together to form a daily energy consumption at a certain ambient temperature  $E_T = 0,001 \times 24 \times (P_{ss} + \Delta E_{d:f}|t_{d:f})$ , expressed in kWh/24 h, specific to the settings applied;
- $E_{aux}$ , expressed in kWh/a and rounded to three decimal places.  $E_{aux}$  is limited to the ambient controlled anti-condensation heater and is determined from the heater's power consumption at a number of ambient temperature and humidity conditions, multiplied with the probability that this ambient temperature and humidity condition occurs and summed; this result is subsequently multiplied with a loss factor to account for heat leakage into the compartment and its subsequent removal by the refrigeration system.

|                       |                  | • •                               | •                  | <i>,</i> 1       |                |
|-----------------------|------------------|-----------------------------------|--------------------|------------------|----------------|
| Crown                 | Compartment type | Note                              | Storage conditions |                  | т              |
| Group                 |                  |                                   | $T_{min}$          | T <sub>max</sub> | I <sub>c</sub> |
| Name                  | Name             | no.                               | °C                 | °C               | °C             |
| Unfrozen compartments | Pantry           | (1)                               | +14                | +20              | +17            |
|                       | Wine storage     | ( <sup>2</sup> ) ( <sup>6</sup> ) | +5                 | +20              | +12            |
|                       | Cellar           | (1)                               | +2                 | +14              | +12            |
|                       | Fresh food       | (1)                               | 0                  | +8               | +4             |

#### Table 3

Storage conditions and target temperature per compartment type

| Creation                                                                    | Commentaria da la comp | Nete                              | Storage c | onditions        | т              |  |
|-----------------------------------------------------------------------------|------------------------|-----------------------------------|-----------|------------------|----------------|--|
| Group Con<br>Name<br>nill compartment Chill<br>0-star &<br>1-star<br>2-star | Compartment type       | Note                              | $T_{min}$ | T <sub>max</sub> | I <sub>c</sub> |  |
| Name                                                                        | Name                   | no.                               | °C        | °C               | °C             |  |
| Chill compartment                                                           | Chill                  | (3)                               | -3        | +3               | +2             |  |
| Frozen compartments                                                         | 0-star & ice-making    | (4)                               | n.a.      | 0                | 0              |  |
|                                                                             | 1-star                 | (4)                               | n.a.      | -6               | -6             |  |
|                                                                             | 2-star                 | ( <sup>4</sup> ) ( <sup>5</sup> ) | n.a.      | -12              | -12            |  |
|                                                                             | 3-star                 | ( <sup>4</sup> ) ( <sup>5</sup> ) | n.a.      | -18              | -18            |  |
|                                                                             | freezer (4-star)       | ( <sup>4</sup> ) ( <sup>5</sup> ) | n.a.      | -18              | -18            |  |

Notes:

(1)  $T_{min}$  and  $T_{max}$  are the average values measured over the test period (average over time and over a set of sensors).

 $(^2)$  The average temperature variation over the test period for each sensor shall be no more than  $\pm 0.5$  kelvin (K). During a defrost and recovery period the average of all sensors is not permitted to rise more than 1.5 K above the average value of the compartment.

(3)  $T_{min}$  and  $T_{max}$  are the instantaneous values during the test period.

(4)  $T_{max}$  is the maximum value measured over the test period (maximum over time and over a set of sensors).

(<sup>5</sup>) If the compartment is of the auto-defrosting type, the temperature (defined as the maximum of all sensors) is not permitted to rise more than 3,0 K during a defrost and recovery period.

(<sup>6</sup>) **T**<sub>min</sub> and **T**<sub>max</sub> are the average values measured over the test period (average over time for each sensor) and define the maximum allowed temperature operating range.

n.a = not applicable

Each of these parameters shall be determined through a separate test or set of tests. Measurement data is averaged over a test period which is taken after the appliance has been in operation for a certain time. To improve the efficiency and accuracy of testing, the length of the test period shall not be fixed; it shall be such that the appliance is in steady state condition during this test period. This is validated by examining all data within this test period against a set of stability criteria and whether enough data could be collected in this steady state.

AE, expressed in kWh/a and rounded to two decimal places, shall be calculated as follows:

$$AE = 365 \times E_{daily}/L + E_{aux}$$

with

- the load factor L = 0.9 for refrigerating appliances with only frozen compartments and L = 1.0 for all other appliances; and
- with  $E_{daily}$ , expressed in kWh/24 h and rounded to three decimal places calculated from  $E_T$  at an ambient temperature of 16 °C ( $E_{16}$ ) and at an ambient temperature of 32 °C ( $E_{32}$ ) as follows:

$$E_{daily} = 0.5 \times (E_{16} + E_{32})$$

where  $E_{16}$  and  $E_{32}$  are derived by interpolation of the energy test at the target temperatures set out in Table 3.

(b) For low noise refrigerating appliances:

The energy consumption shall be determined as provided for in point 3(a), but at an ambient temperature of 25 °C instead of at 16 °C and 32 °C.

 $E_{daily}$ , expressed in kWh/24 h and rounded to three decimal places for the calculation of the AE is then as follows:

$$E_{dailv} = E_{25}$$

where  $E_{25}$  is  $E_T$  at an ambient temperature of 25 °C and derived by interpolation of the energy tests at the target temperatures listed in Table 3.

- 4. Determination of the standard annual energy consumption (SAE):
- (a) For all refrigerating appliances:

SAE, expressed in kWh/a and rounded to two decimal places, is calculated as follows:

$$SAE = C \times D \times \sum_{c=1}^{n} A_{c} \times B_{c} \times [V_{c}/V] \times (N_{c} + V \times r_{c} \times M_{c})$$

where

- c is the index number for a compartment type ranging from 1 to n, with n the total number of compartment types;
- V<sub>c</sub> expressed in dm<sup>3</sup> or litres and rounded to the first decimal place is the compartment volume;
- V, expressed in dm<sup>3</sup> or litres and rounded to the nearest integer, is the total volume with  $V \leq \sum_{c=1}^{n} V_c$ ;
- $-r_{o} N_{o} M_{c}$  and C are modelling parameters specific to each compartment with values as set out in Table 4; and

 $- A_{c} B_{c}$  and D are the compensation factors with values as set out in Table 5.

When carrying out the calculations above, for the variable temperature compartments, the compartment type with the lowest target temperature for which it is declared suitable is chosen.

(b) Modelling parameters per compartment type for the calculation of SAE:

The modelling parameters are set out in Table 4.

| Tabl | е | 4 |
|------|---|---|
|------|---|---|

The values of the modelling parameters per compartment type

| Compartment type    | $r_c$ ( <sup>a</sup> ) | N <sub>c</sub> | M <sub>c</sub> | С                                 |
|---------------------|------------------------|----------------|----------------|-----------------------------------|
| Pantry              | 0,35                   |                |                |                                   |
| Wine storage        | 0,60                   | - 75           | 0,12           | between 1.15 and 1.56 for combi   |
| Cellar              | 0,60                   |                |                |                                   |
| Fresh food          | 1,00                   |                |                |                                   |
| Chill               | 1,10                   | 138            | 0,12           | appliances with 3- or 4-star com- |
| 0-star & ice-making | 1,20                   |                |                | combi appliances, 1,00 for other  |
| 1-star              | 1,50                   | 138            |                | refrigerating appliances          |
| 2-star              | 1,80                   |                | 0,15           |                                   |
| 3-star              | 2,10                   |                |                |                                   |
| Freezer (4-star)    | 2,10                   |                |                |                                   |

(a)  $r_c = (T_a - T_c)/20$ ; with  $T_a = 24$  °C and  $T_c$  with values as set out in Table 3.

(b) C for combi appliances with 3- or 4-star compartments is determined as follows: where frzf is the 3- or 4-star compartment volume  $V_{fr}$  as a fraction of V with frzf =  $V_{fr}/V$ :

— if  $frzf \le 0.3$  then  $C = 1.3 + 0.87 \times frzf$ ;

- else if 0.3 < frzf < 0.7 then  $C = 1.87 - 1.0275 \times \text{frzf}$ ;

- else C = 1,15.

(c) Compensation factors per compartment type in the calculation of SAE:

The compensation factors are set out in Table 5.

## Table 5

# The values of the compensation factors per compartment type

| Compartment type    |                   | A <sub>c</sub> B <sub>c</sub> |                           | τ D                   |         |       |       |         |
|---------------------|-------------------|-------------------------------|---------------------------|-----------------------|---------|-------|-------|---------|
|                     | Manual<br>defrost | Auto-defrost                  | Freestanding<br>appliance | Built-in<br>appliance | ≤ 2 (ª) | 3 (ª) | 4 (ª) | > 4 (ª) |
| Pantry              |                   |                               |                           |                       |         |       |       |         |
| Wine storage        |                   | 1,00                          |                           | 1,02                  |         |       |       |         |
| Cellar              | 1                 |                               |                           |                       |         |       |       |         |
| Fresh food          |                   |                               |                           |                       |         |       |       |         |
| Chill               |                   | -                             |                           | 1,03                  | 1.00    | 1.02  | 1.025 | 1.05    |
| 0-star & ice-making |                   |                               | 1,00                      |                       | 1,00    | 1,02  | 1,035 | 1,05    |
| 1-star              |                   |                               |                           |                       |         |       |       |         |
| 2-star              | 1,00              | 1,10                          |                           | 1,05                  |         |       |       |         |
| 3-star              |                   |                               |                           |                       |         |       |       |         |
| Freezer (4-star)    |                   |                               |                           |                       |         |       |       |         |
|                     |                   |                               |                           |                       | •       | •     | 1     | 1       |

(ª) number of external doors or compartments, whichever is lowest.

## 5. Determination of the EEI:

EEI, expressed in % and rounded to the first decimal place, calculated as:

EEI = AE/SAE.

#### ANNEX IV

#### Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicating better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, the authorities of the Member States shall apply the following procedure for the requirements referred to in Annex II:

- 1. The Member State authorities shall verify one single unit of the model.
- 2. The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to point (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and
  - (c) when the Member State authorities check the unit of the model, they check whether the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and
  - (d) when the Member State authorities check the unit of the model, it complies with the functional requirements in point 2 of Annex II points from (a) to (f) and the requirements on resource efficiency in point 3 of Annex II; and
  - (e) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as set out in Table 6.
- 3. If the results referred to in point 2(a), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 4. If the result referred to in point 2(e) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- 5. The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances set out in Table 6.
- 6. If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 7. The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay once a decision has been taken on the non-compliance of the model according to points 3 or 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex III.

The Member State authorities shall only apply the verification tolerances that are set out in Table 6 and shall use only the procedure described in points 1 to 7 for the requirements set out in this Annex. For the parameters in Table 6, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

## Table 6

#### Verification tolerances

| Parameters                                          | Verification tolerances                                                                                                                       |  |  |  |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
| Total volume and compartment volume                 | The determined value ( <sup>a</sup> ) shall not be more than 3 % or 1 litre lower — whichever is the greater value — than the declared value. |  |  |  |
| Freezing capacity                                   | The determined value (ª) shall not be more than 10 % lower than the declared value.                                                           |  |  |  |
| E <sub>16</sub> , E <sub>32</sub>                   | The determined value (ª) shall not be more than 10 % higher than the declared value.                                                          |  |  |  |
| E <sub>aux</sub>                                    | The determined value ( <sup>a</sup> ) shall not be more than 10 % higher than the declared value.                                             |  |  |  |
| Annual energy consumption                           | The determined value ( <sup>a</sup> ) shall not be more than 10 % higher than the declared value.                                             |  |  |  |
| Internal humidity of wine storage<br>appliances (%) | The determined value ( <sup>a</sup> ) shall not differ from the limits of the pre-<br>scribed range by more than 10 %.                        |  |  |  |
| Airborne acoustical noise emission                  | The determined value ( <sup>a</sup> ) shall not be more than 2 dB(A) re 1 pW more than the declared value.                                    |  |  |  |
| (ª) in the case of three additional units tested as | prescribed in point 4, the determined value means the arithmetic mean of the values                                                           |  |  |  |

determined for these three additional units.

#### ANNEX V

#### Benchmarks

At the time of entry into force of this Regulation, the best available technology on the market for refrigerating appliances in terms of their energy efficiency index (EEI) and airborne acoustical noise emissions was identified as outlined below.

The figures below were obtained using a simplified conversion from the EEI-values as determined according to Regulation (EC) No 643/2009. The figures in brackets indicate the EEI-value as determined according to Regulation (EC) No 643/2009.

Refrigerating appliances:

Transparent door:

Dedicated fresh food refrigerating appliance ('refrigerator'):

| Large:                                                     | EEI = 57 % [18 %],                         | V = 309 litre,            | AE = 70  kWh/a  |  |  |  |
|------------------------------------------------------------|--------------------------------------------|---------------------------|-----------------|--|--|--|
| Table-top:                                                 | EEI = 63 % [22 %],                         | V = 150 litre,            | AE = 71  kWh/a  |  |  |  |
| Wine storage appliance:                                    |                                            |                           |                 |  |  |  |
| Insulated external door:                                   | EEI = 113 % [33 %],                        | V = 499 litre,            | AE = 111  kWh/a |  |  |  |
| Transparent door:                                          | EEI = 140 % [42 %],                        | V = 435 litre,            | AE = 133 kWh/a  |  |  |  |
| Refrigerator-freezer:                                      |                                            |                           |                 |  |  |  |
| EEI = 59 % [18 %],                                         | V = 343 litres (223/27/93 lit<br>freezer), | res for fresh-food/chill/ | AE = 146  kWh/a |  |  |  |
| Freezer:                                                   |                                            |                           |                 |  |  |  |
| Upright Small:                                             | EEI = 52 % [20 %],                         | V = 103 litre,            | AE = 95  kWh/a  |  |  |  |
| Upright Medium:                                            | EEI = 63 % [22 %],                         | V = 206 litre,            | AE = 137  kWh/a |  |  |  |
| Chest:                                                     | EEI = 55 % [22 %],                         | V = 230 litre,            | AE = 116  kWh/a |  |  |  |
| Lowest noise reported (of all models): 34-35 dB(A) re 1 pW |                                            |                           |                 |  |  |  |
| Low-noise refrigerating applia                             | nce (dedicated cellar or pantry            | refrigerating appliance): |                 |  |  |  |
| Insulated external door:                                   | EEI = 233 % [73 %],                        | V = 30 litre,             | AE = 182  kWh/a |  |  |  |

Low noise appliances are reported to have airborne acoustical noise emissions lower than 15 dB(A) re 1 pW according to current test standards.

V = 40 litre,

AE = 255 kWh/a

EEI = 330 % [102 %],

#### COMMISSION REGULATION (EU) 2019/2020

#### of 1 October 2019

laying down ecodesign requirements for light sources and separate control gears pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (<sup>1</sup>), and in particular Article 15(1) thereof,

Whereas:

- (1) Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) The Ecodesign Working Plan 2016-2019 (<sup>2</sup>) established by the Commission in application of Article 16(1) of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The Working Plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of the current regulations.
- (3) Measures from the Working Plan have an estimated potential to deliver a total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Lighting is one of the product groups listed in the Working Plan, with an estimated 41,9 TWh of annual final energy savings in 2030.
- (4) The Commission established ecodesign requirements for lighting products in Commission Regulations (EC) No 244/2009 (<sup>3</sup>), (EC) No 245/2009 (<sup>4</sup>) and (EU) No 1194/2012 (<sup>5</sup>). Pursuant to those Regulations the Commission should review them in the light of technological progress.
- (5) The Commission has reviewed those Regulations and analysed the technical, environmental and economic aspects of lighting products as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- (6) The review shows the benefit of updating the requirements for lighting products and the benefit of simplifying the requirements to be applied to lighting products, in particular by having one single regulation for this product group. This is in line with the Commission's 'Better Regulation' policy and should decrease the administrative burden for manufacturers and importers, and to facilitate verification by market surveillance authorities, inter alia, by better defining the scope and exemptions, reducing the number of parameters for compliance testing and decreasing the time of some test procedures.
- (7) In accordance with the review, broadly, all lighting products that fall within the scope of the three existing regulations should be covered by this Regulation. Furthermore, a uniform formula should be set to calculate the energy efficiency of such lighting products.

<sup>(&</sup>lt;sup>1</sup>) OJ L 285, 31.10.2009, p. 10.

<sup>&</sup>lt;sup>(2)</sup> COM(2016) 773 final of 30.11.2016.

<sup>(&</sup>lt;sup>3</sup>) Commission Regulation (EC) No 244/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for non-directional household lamps (OJ L 76, 24.3.2009, p. 3).

<sup>(&</sup>lt;sup>4</sup>) Commission Regulation (EC) No 245/2009 of 18 March 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for fluorescent lamps without integrated ballast, for high intensity discharge lamps, and for ballasts and luminaires able to operate such lamps, and repealing Directive 2000/55/EC of the European Parliament and of the Council (OJ L 76, 24.3.2009, p. 17).

<sup>(5)</sup> Commission Regulation (EU) No 1194/2012 of 12 December 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for directional lamps, light emitting diode lamps and related equipment (OJ L 342, 14.12.2012, p. 1).

- (8) The annual electricity consumption of products subject to this Regulation in the Union was estimated at 336 TWh in 2015. This covers 12,4 % of the overall use of electricity by the 28 Member States and corresponds to 132 million tonnes of  $CO_2$  equivalent greenhouse gas emissions. The energy consumption of lighting products in a business-as-usual scenario is projected to decrease by 2030. However, this reduction is expected to slow down unless the existing ecodesign requirements are updated.
- (9) The environmental aspects of lighting products that have been identified as significant for the purposes of this Regulation are energy consumption in the use phase along with mercury content.
- (10) The use of hazardous substances, including mercury in light sources, is governed by Directive 2011/65/EU of the European Parliament and of the Council (RoHS) (<sup>6</sup>). No specific ecodesign requirements on mercury content should therefore be set in this Regulation.
- (11) The Commission Communication on the circular economy (7) and the Working Plan underline the importance of using the ecodesign framework to support the move towards more resource efficient and circular economy. Directive 2012/19/EU of the European Parliament and of the Council (8) refers to Directive 2009/125/EC and indicates that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste of electrical and electronic equipment (WEEE) by tackling the issues upstream. The WEEE Directive sets requirements for separate collection and recycling of lighting products, with new provisions from August 2018. This Regulation should therefore not lay down further requirements for this. At the same time, this Regulation supports the repairability of products containing light sources.
- (12) In view of the need to promote the circular economy and the ongoing work for material efficiency standardisation in relation to energy-related products, future standardisation work should also address the modularisation of LED lighting products, including aspects such as luminous flux, radiation spectrum and light distribution.
- (13) Specific requirements for the standby and networked standby electric power demand of lighting products should be laid down. Therefore, the requirements of Commission Regulation (EC) No 1275/2008 <sup>(9)</sup> should not apply to lighting products covered by the scope of this Regulation.
- (14) Mandatory ecodesign requirements apply to products placed on the Union market wherever they are installed or used and should therefore not be made dependent on the application in which the product is used.
- (15) Exemptions from the requirements set out in this Regulation should be made for light sources with special technical features for use in specific applications, including those related to health and safety, and for which higher energy efficiency alternatives are not available or not cost-effective.
- (16) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods, including, where available, harmonised standards adopted by the European standardisation organisations, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>10</sup>).

<sup>(&</sup>lt;sup>6</sup>) Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (OJ L 174, 1.7.2011, p. 88).

<sup>(7)</sup> COM/2015/0614 final of 2.12.2015.

<sup>(&</sup>lt;sup>8</sup>) Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (OJ L 197, 24.7.2012, p. 38).

<sup>(&</sup>lt;sup>9</sup>) Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p. 45).

<sup>(&</sup>lt;sup>10</sup>) Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

- (17) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (18) To facilitate compliance checks, manufacturers, importers or authorised representatives should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation. The parameters of the technical documentation in accordance with this Regulation which are identical to the parameters of the product information sheet in accordance with Commission Delegated Regulation (EU) 2019/2015 (<sup>11</sup>) and which have been entered in the product database established by Regulation (EU) 2017/1369 of the European Parliament and of the Council (<sup>12</sup>) should no longer be included in the technical documentation of this Regulation.
- (19) This Regulation should specify tolerance values for lighting parameters taking into account the approach to information declaration laid down in Commission Regulation (EU) 2016/2282 (<sup>13</sup>).
- (20) To improve the effectiveness of this Regulation and to protect consumers, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited.
- (21) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on products' environmental performance over their life cycle subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex 1, part 3, point 2.
- (22) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should allow for all provisions to be implemented and show an effect on the market.
- (23) Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012 should therefore be repealed.
- (24) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC.

HAS ADOPTED THIS REGULATION:

#### Article 1

#### Subject matter and scope

- 1. This Regulation establishes ecodesign requirements for the placing on the market of
- (a) light sources;
- (b) separate control gears.

The requirements also apply to light sources and separate control gears placed on the market in a containing product.

2. This Regulation shall not apply to light sources and separate control gears specified in points 1 and 2 of Annex III.

<sup>(&</sup>lt;sup>11</sup>) Commission Delegated Regulation (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012 (see page 68 of this Official Journal).

<sup>(&</sup>lt;sup>12</sup>) Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1).

 <sup>(&</sup>lt;sup>13</sup>) Commission Regulation (EU) 2016/2282 of 30 November 2016 amending Regulations (EC) No 1275/2008, (EC) No 107/2009, (EC) No 278/2009, (EC) No 640/2009, (EC) No 641/2009, (EC) No 642/2009, (EC) No 643/2009, (EU) No 1015/2010, (EU) No 1016/2010, (EU) No 327/2011, (EU) No 206/2012, (EU) No 547/2012, (EU) No 932/2012, (EU) No 617/2013, (EU) No 666/2013, (EU) No 813/2013, (EU) No 814/2013, (EU) No 66/2014, (EU) No 548/2014, (EU) No 1253/2014, (EU) 2015/1095, (EU) 2015/1185, (EU) 2015/1188, (EU) 2015/1189 and (EU) 2016/2281 with regard to the use of tolerances in verification procedures (OJ L 346, 20.12.2016, p. 51).

3. Light sources and separate control gears specified in point 3 of Annex III shall comply only with the requirements of point 3(e) of Annex II.

#### Article 2

#### Definitions

For the purpose of this Regulation, the following definitions shall apply:

- (1) 'light source' means an electrically operated product intended to emit, or, in the case of a non-incandescent light source, intended to be possibly tuned to emit, light, or both, with all of the following optical characteristics:
  - (a) chromaticity coordinates x and y in the range

0,270 < x < 0,530 and

2,3172 x<sup>2</sup> + 2,3653 x - 0,2199 < y < - 2,3172 x<sup>2</sup> + 2,3653 x - 0,1595;

- (b) a luminous flux < 500 lumen per mm<sup>2</sup> of projected light-emitting surface area as defined in Annex I;
- (c) a luminous flux between 60 and 82 000 lumen;
- (d) a colour rendering index (CRI) > 0;

using incandescence, fluorescence, high-intensity discharge, inorganic light emitting diodes (LED) or organic light emitting diodes (OLED), or their combinations as lighting technology, and that can be verified as a light source according to the procedure of Annex IV.

High-pressure sodium (HPS) light sources that do not fulfil condition (a) are considered light sources for the purposes of this Regulation.

Light sources do not include:

- (a) LED dies or LED chips;
- (b) LED packages;
- (c) products containing light source(s) from which these light source(s) can be removed for verification;
- (d) light-emitting parts contained in a light source from which these parts cannot be removed for verification as a light source;
- (2) 'control gear' means one or more devices, that may or may not be physically integrated in a light source, intended to prepare the mains for the electric format required by one or more specific light sources within boundary conditions set by electric safety and electromagnetic compatibility. It may include transforming the supply and starting voltage, limiting operational and preheating current, preventing cold starting, correcting the power factor and/or reducing radio interference.

The term 'control gear' does not include power supplies within the scope of Commission Regulation (EC) No 278/2009 (<sup>14</sup>). The term also does not include lighting control parts and non-lighting parts (as defined in Annex I), although such parts may be physically integrated with a control gear or marketed together as a single product.

A Power over Ethernet (PoE) switch is not a control gear in the sense of this Regulation. 'Power-over-Ethernet switch' or 'PoE switch' means equipment for power-supply and data-handling that is installed between the mains and office equipment and/or light sources for the purpose of data transfer and power supply;

<sup>(14)</sup> Commission Regulation (EC) No 278/2009 of 6 April 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for no-load condition electric power consumption and average active efficiency of external power supplies (OJ L 93, 7.4.2009, p. 3).

- (3) 'separate control gear', means a control gear that is not physically integrated with a light source and is placed on the market as a separate product or as a part of a containing product;
- (4) 'containing product' means a product containing one or more light sources, or separate control gears, or both. Examples of containing products are luminaires that can be taken apart to allow separate verification of the contained light source(s), household appliances containing light source(s), furniture (shelves, mirrors, display cabinets) containing light source(s). If a containing product cannot be taken apart for verification of the light source and separate control gear, the entire containing product is to be considered a light source;
- (5) 'light' means electromagnetic radiation with a wavelength between 380 nm and 780 nm;
- (6) 'mains' or 'mains voltage' (MV) means the electricity supply of 230 (± 10 %) volt of alternating current at 50 Hz;
- (7) 'LED die' or 'LED chip' means a small block of light-emitting semiconducting material on which a functional LED circuit is fabricated;
- (8) 'LED package' means a single electric part comprising principally at least one LED die. It does not include a control gear or parts of it, a cap or active electronic components and is not connected directly to the mains voltage. It can include one or more of the following: optical elements, light converters (phosphors), thermal, mechanical and electric interfaces or parts to address electrostatic discharge concerns. Any light-emitting devices that are intended to be used directly in an LED luminaire, are considered to be light sources;
- (9) 'chromaticity' means the property of a colour stimulus defined by its chromaticity coordinates (x and y);
- (10) 'luminous flux' or 'flux' ( $\Phi$ ), expressed in lumen (lm), means the quantity derived from radiant flux (radiant power) by evaluating the electromagnetic radiation in accordance with the spectral sensitivity of the human eye. It refers to the total flux emitted by a light source in a solid angle of  $4\pi$  steradians under conditions (e.g. current, voltage, temperature) specified in applicable standards. It refers to the initial flux for the undimmed light source after a short operating period, unless it is clearly specified that the flux in a dimmed condition or the flux after a given period of operation is intended. For light sources that can be tuned to emit different light spectra and/or different maximum light intensities, it refers to the flux in the 'reference control settings' as defined in Annex I;
- (11) 'colour rendering index' (CRI) means a metric quantifying the effect of an illuminant on the colour appearance of objects by conscious or subconscious comparison with their colour appearance under the reference illuminant and is the average Ra of the colour rendering for the first 8 test colours (R1-R8) defined in standards;
- (12) 'incandescence' means the phenomenon where light is produced from heat, in light sources typically produced through a threadlike conductor ('filament') which is heated by the passage of an electric current;
- (13) 'halogen light source' means an incandescent light source with a threadlike conductor made from tungsten surrounded by gas containing halogens or halogen compounds;
- (14) 'fluorescence' or 'fluorescent light source' (FL) means the phenomenon or a light source using an electric gas discharge of the low-pressure mercury type in which most of the light is emitted by one or more layers of phosphors excited by the ultraviolet radiation from the discharge. Fluorescent light sources may have one ('single-capped') or two ('double-capped') connections ('caps') to their electricity supply. For the purposes of this Regulation, magnetic induction light sources are also considered as fluorescent light sources;
- (15) 'high intensity discharge' (HID) means an electric gas discharge in which the light- producing arc is stabilised by wall temperature and the arc chamber has a bulb wall loading in excess of 3 watts per square centimetre. HID light sources are limited to metal halide, high-pressure sodium and mercury vapour types, as defined in Annex I;
- (16) 'gas discharge' means a phenomenon where light is produced, directly or indirectly, by an electric discharge through a gas, plasma, metal vapour or mixture of gases and vapours;

- (17) 'inorganic light emitting diode' (LED) means a technology in which light is produced from a solid state device embodying a p-n junction of inorganic material. The junction emits optical radiation when excited by an electric current;
- (18) 'organic light emitting diode' (OLED) means a technology in which light is produced from a solid state device embodying a p-n junction of organic material. The junction emits optical radiation when excited by an electric current;
- (19) 'high-pressure sodium light source' (HPS) means a high intensity discharge light source in which the light is produced mainly by radiation from sodium vapour operating at a partial pressure of the order of 10 kilopascals. HPS light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply.
- (20) 'equivalent model' means a model with the same technical characteristics relevant for the ecodesign requirements, but that is placed on the market or put into service by the same manufacturer or importer as another model with a different model identifier;
- (21) 'model identifier' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer's or importer's name;
- (22) 'end-user' means a natural person buying or expected to buy a product for purposes which are outside his trade, business, craft or profession.

For the purposes of the Annexes, additional definitions are set out in Annex I.

## Article 3

## **Ecodesign requirements**

The ecodesign requirements set out in Annex II shall apply from the dates indicated therein.

## Article 4

#### Removal of light sources and separate control gears

1. Manufacturers, importers or authorised representatives of containing products shall ensure that light sources and separate control gears can be replaced with the use of common available tools and without permanent damage to the containing product, unless a technical justification related to the functionality of the containing product is provided in the technical documentation explaining why the replacement of light sources and separate control gear is not appropriate.

The technical documentation shall also provide instructions on how light sources and separate control gears can be removed without being permanently damaged for verification purposes by market surveillance authorities.

2. Manufacturers, importers or authorised representatives of containing products shall provide information about the replaceability or non-replaceability of light sources and control gears by end-users or qualified persons without permanent damage to the containing product. Such information shall be available on a free-access website. For products sold directly to end-users, this information shall be on the packaging, at least in the form of a pictogram, and in the user instructions.

3. Manufacturers, importers or authorised representatives of containing products shall ensure that light sources and separate control gears can be dismantled from containing products at end of life. Dismantling instructions shall be available on a free access website.

#### Article 5

#### Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.
2. For the purposes of the conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain the information set out in point 3(d) of Annex II to this Regulation and the details and the results of the calculations in accordance with points 1 and 2 of Annex II, and Annex V to this Regulation.

- 3. Where the information included in the technical documentation for a particular model has been obtained:
- (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer, or
- (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,

the technical documentation shall include details of such calculations or extrapolations, the assessment carried out by the manufacturer to verify the accuracy of the calculations and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

4. The technical documentation shall include the information in the order and as set out in Annex VI of Regulation (EU) 2019/2015. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to Annex IV, point 2(g) of Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Regulation (EU) 2019/2015.

# Article 6

## Verification procedure for market surveillance purposes

Member States shall apply the verification procedure laid down in Annex IV to this Regulation when performing the market surveillance checks referred to in point 2 of Article 3 of Directive 2009/125/EC.

### Article 7

### Circumvention

The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any of the documentation provided.

The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update.

### Article 8

#### **Indicative benchmarks**

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex VI.

#### Article 9

### Review

The Commission shall review this Regulation in the light of technological progress and shall present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2024.

This review shall in particular assess the appropriateness of:

- (a) setting more stringent energy efficiency requirements for all light source types, in particular for non-LED light source types, and for separate control gears;
- (b) setting requirements on lighting control parts;
- (c) setting more stringent requirements on flicker and stroboscopic effects, while extending them to separate control gears;
- (d) setting requirements on dimming, including the interaction with flicker;
- (e) setting more stringent requirements on (networked) standby power;
- (f) lowering or abolishing the power bonus for colour-tuneable light sources and removing the exemption for high colour purity;
- (g) setting lifetime requirements;
- (h) setting improved information requirements concerning lifetime, including for control gears;
- (i) substituting the CRI colour rendering metric by a more adequate metric;
- (j) verifying the adequacy of lumen as a stand-alone metric for the quantity of visible light;
- (k) the exemptions;
- (l) setting additional resource efficiency requirements for products in accordance with the principles of the circular economy, especially concerning the removability and exchangeability of light sources and control gears.

#### Article 10

# Repeal

Regulations (EC) No 244/2009, (EC) No 245/2009 and (EU) No 1194/2012 are repealed with effect from 1 September 2021.

## Article 11

### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 September 2021. However, Article 7 shall apply from 25 December 2019.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 1 October 2019.

For the Commission The President Jean-Claude JUNCKER

### ANNEX I

### Definitions applicable for the Annexes

The following definitions shall apply:

- (1) 'mains light source (MLS)' means a light source that can be operated directly on the mains electricity supply. Light sources that operate directly on the mains, and can also operate indirectly on the mains using a separate control gear, shall be considered to be mains light sources;
- (2) 'non-mains light source (NMLS)' means a light source that requires a separate control gear to operate on the mains;
- (3) 'directional light source' (DLS) means a light source having at least 80 % of total luminous flux within a solid angle of  $\pi$  sr (corresponding to a cone with angle of 120°);
- (4) 'non-directional light source' (NDLS) means a light source that is not a directional light source;
- (5) 'connected light source' (CLS) means a light source including data-connection parts that are physically or functionally inseparable from the light emitting parts to maintain the 'reference control settings'. The light source can have physically integrated data-connection parts in a single inseparable housing, or the light source can be combined with physically separate data-connection parts placed on the market together with the light source as a single product;
- (6) 'connected separate control gear' (CSCG) means a separate control gear including data-connection parts that are physically or functionally inseparable from the actual control gear parts to maintain the 'reference control settings'. The separate control gear can have physically integrated data-connection parts in a single inseparable housing, or the separate control gear can be combined with physically separate data-connection parts placed on the market together with the control gear as a single product;
- (7) 'data-connection parts' means parts that perform any one of the following functions:
  - (a) reception or transmission of wired or wireless data signals and the processing thereof (used to control the light emission function and possibly otherwise);
  - (b) sensing and processing of the sensed signals (used to control the light emission function and possibly otherwise);
  - (c) a combination of these;
- (8) 'colour-tuneable light source' (CTLS) means a light source that can be set to emit light with a large variety of colours outside the range defined in Article 2 but can also be set to emit white light inside the range defined in Article 2 for which the light source is within the scope of this Regulation.

Tuneable-white light sources that can only be set to emit light, with different correlated colour temperatures, within the range defined in Article 2, and dim-to-warm light sources that shift their white light output to lower correlated colour temperature when dimmed, simulating the behaviour of incandescent light sources, are not considered CTLS;

- (9) 'excitation purity' means a percentage computed for a CTLS set to emit light of a certain colour, using a procedure further defined in standards, by drawing a straight line on an (x and y) colour space graph from a point with colour coordinates x = 0,333 and y = 0,333 (achromatic stimulus point), going through the point representing the (x and y) colour coordinates of the light source (point (2), and ending on the outer border of the colour space (locus; point (3). The excitation purity is computed as the distance between points 1 and 2 divided by the distance between points 1 and 3. The full length of the line represents 100 % colour purity (point on the locus). The achromatic stimulus point represents 0 % colour purity (white light);
- (10) 'high-luminance light source' (HLLS) means a LED light source with an average luminance greater than 30 cd/mm<sup>2</sup> in the direction of peak intensity;

- (11) 'luminance' (in a given direction, at a given point of a real or imaginary surface) means the luminous flux transmitted by an elementary beam passing through the given point and propagating in the solid angle containing the given direction divided by the area of a section of that beam containing the given point (cd/m<sup>2</sup>);
- (12) 'average luminance' (Luminance-HLLS) for a LED light source means the average luminance over a light-emitting area where the luminance is more than 50 % of the peak luminance (cd/mm<sup>2</sup>);
- (13) 'lighting control parts' means parts that are integrated in a light source or in a separate control gear, or physically separated but marketed together with a light source or separate control gear as a single product, that are not strictly necessary for the light source to emit light at full-load, or for the separate control gear to supply the electric power that enables light source(s) to emit light at full-load, but that enable manual- or automatic-, direct- or remote-, control of luminous intensity, chromaticity, correlated colour temperature, light spectrum and/or beam angle. Dimmers shall also be considered as lighting control parts.

The term also includes data-connection parts, but the term does not include products within the scope of Regulation (EC) No 1275/2008;

(14) 'non-lighting parts' means parts that are integrated in a light source, or in a separate control gear, or physically separated but marketed together with a light source or separate control gear as a single product, that are not necessary for the light source to emit light at full-load, or for the separate control gear to supply the electric power that enables light source(s) to emit light at full-load, and that are not lighting control parts. Examples include, but are not limited to: speakers (audio), cameras, repeaters for communication signals to extend the range (e.g. WiFi), parts supporting grid balance (switching to own internal batteries when necessary), battery charging, visual notification of events (mail arriving, door bell ringing, alert), use of Light Fidelity (Li-Fi, a bidirectional, high-speed and fully networked wireless communication technology).

The term also includes data-connection parts used for other functions than to control the light emission function;

- (15) 'useful luminous flux' ( $\Phi_{use}$ ), means the part of the luminous flux of a light source that is considered when determining its energy efficiency:
  - for non-directional light sources it is the total flux emitted in a solid angle of  $4\pi$  sr (corresponding to a 360° sphere);
  - for directional light sources with beam angle  $\ge 90^\circ$  it is the flux emitted in a solid angle of  $\pi$  sr (corresponding to a cone with angle of 120°);
  - for directional light sources with beam angle < 90° it is the flux emitted in a solid angle of  $0.586\pi$  sr (corresponding to a cone with angle of 90°);
- (16) 'beam angle' of a directional light source means the angle between two imaginary lines in a plane through the optical beam axis, such that these lines pass through the centre of the front face of the light source and through points at which the luminous intensity is 50 % of the centre beam intensity, where the centre beam intensity is the value of luminous intensity measured on the optical beam axis.

For light sources that have different beam angles in different planes, the largest beam angle shall be the one taken into account.

For light sources with user-controllable beam angle, the beam angle corresponding to the 'reference control setting' shall be the one taken into account;

- (17) 'full-load' means:
  - the condition of a light source, within the declared operating conditions, in which it emits the maximum (undimmed) luminous flux; or
  - the operating conditions and loads of the control gear under efficiency measurement as specified in the relevant standards;

- (18) 'no-load mode' means the condition of a separate control gear in which its input is connected to the mains power source and its output is intentionally disconnected from light sources, and, if applicable, from lighting control parts and non-lighting parts. If these parts cannot be disconnected, they shall be switched off and their power consumption shall be minimised following the manufacturer's instructions. No-load mode only applies to a separate control gear for which the manufacturer or importer has declared in the technical documentation that it has been designed for this mode;
- (19) 'standby mode' means the condition of a light source or of a separate control gear, where it is connected to the power supply but the light source is intentionally not emitting light, and the light source or control gear is awaiting a control signal to return to a state with light emission. Lighting control parts enabling the standby function shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimised following manufacturer's instructions;
- (20) 'networked standby mode' means the condition of a CLS or a CSCG where it is connected to the power supply but the light source is intentionally not emitting light or the control gear does not supply the electric power that enables light source(s) to emit light, and is awaiting a remotely initiated trigger to return to a state with light emission. Lighting control parts shall be in their control mode. Non-lighting parts shall be disconnected or switched off or their power consumption shall be minimised following manufacturer's instructions;
- (21) 'control mode' means the condition of lighting control parts where they are connected to the light source and/or to the separate control gear and performing their functions in such a way that a control signal can be internally generated or a remotely initiated trigger can be received, by wire or wireless, and processed to lead to a change in the light emission of the light source or to a corresponding desired change in the power supply by the separate control gear;
- (22) 'remotely initiated trigger' means a signal that comes from outside the light source or separate control gear via a network;
- (23) 'control signal' means an analogue or digital signal transmitted to the light source or separate control gear wirelessly or wired either via voltage modulation in separate control cables or via a modulated signal in the supply voltage. The signal transmission is not through a network but e.g. from an internal source or from a remote control delivered with the product;
- (24) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (25) 'on-mode power' (P<sub>on</sub>), expressed in watt, means the electric power consumption of a light source in full-load with all lighting control parts and non-lighting parts disconnected. If these parts cannot be disconnected, they shall be switched off or their power consumption shall be minimised following the manufacturer's instructions. In case of a NMLS that requires a separate control gear to operate, P<sub>on</sub> can be measured directly on the input to the light source, or P<sub>on</sub> is determined using a control gear with known efficiency, whose electric power consumption is subsequently subtracted from the measured mains power input value;
- (26) 'no-load power' (P<sub>no</sub>), expressed in watt, is the electric power consumption of a separate control gear in no-load mode;
- (27) 'standby power' (P<sub>sb</sub>), expressed in watt, is the electric power consumption of a light source or of a separate control gear in standby mode;
- (28) 'networked standby power' (P<sub>net</sub>), expressed in watt, is the electric power consumption of a CLS or of a CSCG in networked standby mode;
- (29) 'reference control settings' (RCS) means a control setting or a combination of control settings that is used to verify compliance of a light source with this Regulation. These settings are relevant for light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light.

In principle, the reference control settings shall be those predefined by the manufacturer as factory default values and encountered by the user at first installation (out-of-the-box values). If the installation procedure provides for an automatic software update during first installation, or if the user has the option to perform such an update, the resulting change in settings (if any) shall be taken into account.

If the out-of-the-box value is deliberately set differently from the reference control setting (e.g. at low power for safety purposes), the manufacturer shall indicate in the technical documentation how to recall the reference control settings for compliance verification and provide a technical justification why the out-of-the-box value is set different from the reference control setting.

The light source manufacturer shall define the reference control settings such that:

- the light source is within the scope of this Regulation according to Article 1 and none of the conditions for exemption applies;
- lighting control parts and non-lighting parts are disconnected or switched-off or, in case this is not possible, the power consumption of these parts is minimal;
- the full-load condition is obtained;
- when the end-user opts to reset factory defaults, the reference control settings are obtained.

For light sources that allow the manufacturer of a containing product to make implementation choices that influence light source characteristics (e.g. definition of the operating current(s); thermal design), and that cannot be controlled by the end-user, the reference control settings need not be defined. In that case the nominal test conditions as defined by the light source manufacturer apply;

- (30) 'high-pressure mercury light source' means a high intensity discharge light source in which the major portion of light is produced, directly or indirectly, by radiation from predominantly vaporised mercury operating at a partial pressure in excess of 100 kilopascals;
- (31) 'metal halide light source' (MH) means a high intensity discharge light source in which the light is produced by radiation from a mixture of metallic vapour, metal halides and the products of the dissociation of metal halides. MH light sources may have one ('single-ended') or two ('double-ended') connectors to their electricity supply. The material for the arc tube of MH light sources can be quartz (QMH) or ceramic (CMH);
- (32) 'compact fluorescent light source' (CFL) means a single-capped fluorescent light source with a bent-tube construction designed to fit in small spaces. CFLs may be primarily spiral-shaped (i.e. curly forms) or primarily shaped as connected multiple parallel tubes, with or without a second bulb-like envelope. CFLs are available with (CFLi) or without (CFLni) a physically integrated control gear;
- (33) 'T2', 'T5', 'T8', 'T9' and 'T12' means a tubular light source with a diameter of approximately 7, 16, 26, 29 and 38 mm respectively, as defined in standards. The tube can be straight (linear) or bent (e.g. U-shaped, circular);
- (34) 'LFL T5-HE' means a high-efficiency linear fluorescent T5 light source with driving current lower than 0,2 A;
- (35) 'LFL T5-HO' means a high-output linear fluorescent T5 light source with driving current higher than or equal to 0,2 A;
- (36) 'LFL T8 2-foot', 'LFL T8 4-foot' or 'LFL T8 5-foot' means a linear T8 fluorescent light source with a length of approximately 600 mm (2 feet), 1 200 mm (4 feet) or 1 500 mm (5 feet) respectively, as defined in standards;
- (37) 'magnetic induction light source' means a light source using fluorescent technology, where energy is transferred to the gas discharge by means of an induced high-frequency magnetic field, instead of using electrodes placed inside the gas discharge. The magnetic inductor can be external or internal to the shape of the discharge tube;

- (38) 'G4', 'GY6.35' and 'G9' means an electrical interface of a light source consisting of two small pins at distances of 4, 6.35 and 9 mm respectively, as defined in standards;
- (39) 'HL R7s' means a mains-voltage, double-capped, linear halogen light source with a cap diameter of 7 mm;
- (40) 'K39d' means an electrical interface for a light source consisting of 2 wires with eyelets that can be fixed with screws;
- (41) 'G9.5', 'GX9.5', 'GY9.5', 'GZ9.5', 'GZX9.5', 'GZY9.5', 'GZZ9.5' 'G9.5HPL', 'G16', 'G16d', 'GX16d', 'GY16', 'G22', 'G38', 'GX38' and 'GX38Q' means an electrical interface of a light source consisting of two pins at distances of 9.5, 16, 22 and 38 mm respectively, as defined in standards. 'G9.5HPL' includes a heatsink of specific dimensions as used on high-performance halogen lamps, and may include additional pins for grounding purposes;
- (42) 'P28s', 'P40s', 'PGJX28', 'PGJX36' and 'PGJX50' means an electrical interface of a light source that uses a flange contact to correctly position (pre-focus) the light source in a reflector, as defined in standards;
- (43) 'QXL (Quick eXchange Lamp)' means an electrical interface of a light source consisting, on the light source side, of two lateral tabs including the electrical contact surfaces and, on the opposite (rear) side, of a central protrusion allowing the light source to be grabbed with two fingers. It is specifically designed for use in a specific type of stage lighting luminaires, in which the light source is inserted from the rear of the luminaire using a one quarter turn rotation to fix or unfix it;
- (44) 'battery-operated' means a product that operates only on direct current (DC) supplied from a source contained in the same product, without being connected directly or indirectly to the mains electricity supply;
- (45) 'second envelope' means a second outer envelope on an HID light source that is not required for the production of light, such as an external sleeve for preventing mercury and glass release into the environment in case of lamp breakage. In determining the presence of a second envelope, the HID arc tubes shall not count as an envelope;
- (46) 'non-clear envelope' for an HID light source means a non-transparent outer envelope or outer tube in which the light producing arc tube is not visible;
- (47) 'anti-glare shield' means a mechanical or optical reflective or non-reflective impervious baffle designed to block direct visible radiation emitted from the light emitter in a directional light source, in order to avoid temporary partial blindness (disability glare) if viewed directly by an observer. It does not include surface coating of the light emitter in the directional light source;
- (48) 'control gear efficiency' means the output power that supplies a light source divided by the input power of a separate control gear using the conditions and methods defined in standards. Any lighting control parts and non-lighting parts are disconnected, switched off or set to minimum power consumption according to manufacturer's instructions and subtracting this power consumption from the overall input power;
- (49) 'functionality after endurance testing' means the functionality of a LED or OLED light source after endurance testing as defined in Annex V;
- (50) 'flicker' means the perception of visual unsteadiness induced by a light stimulus, the luminance or spectral distribution of which fluctuates with time, for a static observer in a static environment. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

The metric for flicker used in this Regulation is the parameter ' $P_{st}$  LM', where 'st' stands for short term and 'LM' for light flickermeter method, as defined in standards. A value  $P_{st}$  LM = 1 means that the average observer has a 50 % probability of detecting flicker;

(51) 'stroboscopic effect' means a change in motion perception induced by a light stimulus, the luminance or spectral distribution of which fluctuates with time, for a static observer in a non-static environment. The fluctuations can be periodic and non-periodic and may be induced by the light source itself, the power source or other influencing factors.

The metric for the stroboscopic effect used in this Regulation is the 'SVM' (stroboscopic visibility measure), as defined in standards. SVM = 1 represents the visibility threshold for an average observer;

- (52) 'declared value' for a parameter means the value given by the manufacturer or importer in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC;
- (53) 'specific effective radiant ultraviolet power' (mW/klm) means the effective power of the ultraviolet radiation of a light source weighted according to the spectral correction factors and related to its luminous flux;
- (54) 'luminous intensity' (candela or cd) means the quotient of the luminous flux leaving the source and propagated in the element of solid angle containing a given direction, by the element of solid angle;
- (55) 'correlated colour temperature' (CCT [K]) means the temperature of a Planckian (black body) radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions;
- (56) 'colour consistency' means the maximum deviation of the initial (after a short period of time), spatially averaged chromaticity coordinates (x and y) of a single light source from the chromaticity centre point (cx and cy) declared by the manufacturer or the importer, expressed as the size (in steps) of the MacAdam ellipse formed around the chromaticity centre point (cx and cy);
- (57) 'displacement factor ( $\cos \varphi 1$ )' means the cosine of the phase angle  $\varphi 1$  between the fundamental harmonic of the mains supply voltage and the fundamental harmonic of the mains current. It is used for mains light sources using LED- or OLED-technology. The displacement factor is measured at full-load, for the reference control settings where applicable, with any lighting control parts in control mode and non-lighting parts disconnected, switched off or set to minimum power consumption according to the manufacturer's instructions;
- (58) 'lumen maintenance factor' (X<sub>LMF</sub>) means the ratio of the luminous flux emitted by a light source at a given time in its life to the initial luminous flux;
- (59) 'survival factor' (SF) means the defined fraction of the total number of light sources that continue to operate at a given time under defined conditions and switching frequency;
- (60) 'lifetime' for LED and OLED light sources means the time in hours between the start of their use and the moment when for 50 % of a population of light sources the light output has gradually degraded to a value below 70 % of the initial luminous flux. This is also referred to as the  $L_{70}B_{50}$  lifetime;
- (61) 'photosensitive patients' means people with a specific condition causing photosensitive symptoms and who experience adverse reactions to natural and/or certain forms of artificial lighting technology;
- (62) 'projected light-emitting surface area (A)' is the surface area in mm<sup>2</sup> (square millimetres) of the view in an orthographic projection of the light-emitting surface from the direction with the highest light intensity, where the lightemitting surface area is the surface area of the light source that emits light with the declared optical characteristics, such as the approximately spherical surface of an arc (a), cylindrical surface of a filament coil (b) or a gas discharge lamp (c, d), flat or semi-spherical envelope of a light-emitting diode (e).

For light sources with a non-clear envelope or with anti-glare shield, the light-emitting surface area is the entire area through which light leaves the light source.

For light sources containing more than one light emitter, the projection of the smallest gross volume enveloping all emitters shall be taken as the light-emitting surface.

For HID light sources definition (a) applies, unless the dimensions defined in (d) apply with L>D, where L is the distance between the electrode tips and D the inner diameter of the arc tube.



### ANNEX II

#### **Ecodesign requirements**

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art.

- 1. Energy efficiency requirements:
- (a) From 1 September 2021, the declared power consumption of a light source  $P_{on}$  shall not exceed the maximum allowed power  $P_{onmax}$  (in *W*), defined as a function of the declared useful luminous flux  $\Phi_{use}$  (in *lm*) and the declared colour rendering index CRI (-) as follows:

 $P_{onmax} = C \times (L + \Phi_{use}/(F \times \eta)) \times R;$ 

where:

- The values for threshold efficacy ( $\eta$  in lm/W) and end loss factor (L in W) are specified in Table 1, depending on the light source type. They are constants used for computations and do not reflect true parameters of light sources. The threshold efficacy is not the minimum required efficacy; the latter can be computed by dividing the useful luminous flux by the computed maximum allowed power.
- Basic values for correction factor (C) depending on light source type, and additions to C for special light source features are specified in Table 2.
- Efficacy factor (F) is:

1,00 for non-directional light sources (NDLS, using total flux)

0,85 for directional light sources (DLS, using flux in a cone)

- CRI factor (R) is:

0,65 for CRI  $\leq$  25;

(CRI+80)/160 for CRI > 25, rounded to two decimals.

|                    | Table 1 |          |           |    |
|--------------------|---------|----------|-----------|----|
| Threshold efficacy | (η) and | end loss | factor (I | L) |

|                                                                 | η      | L    |
|-----------------------------------------------------------------|--------|------|
| Light source description                                        | [lm/W] | [W]  |
| LFL T5-HE                                                       | 98,8   | 1,9  |
| $\overline{\text{LFL T5-HO, } 4000 \le \Phi \le 5000\text{lm}}$ | 83,0   | 1,9  |
| LFL T5-HO, other <i>lm</i> output                               | 79,0   | 1,9  |
| FL T5 circular                                                  | 79,0   | 1,9  |
| FL T8 (including FL T8 U-shaped)                                | 89,7   | 4,5  |
| From 1 September 2023, for FL T8 of 2-, 4- and 5-foot           | 120,0  | 1,5  |
| Magnetic induction light source, any length/flux                | 70,2   | 2,3  |
| CFLni                                                           | 70,2   | 2,3  |
| FL T9 circular                                                  | 71,5   | 6,2  |
| HPS single-ended                                                | 88,0   | 50,0 |

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|                                                                          | η      | L       |
|--------------------------------------------------------------------------|--------|---------|
| Light source description                                                 | [lm/W] | [W]     |
| HPS double-ended                                                         | 78,0   | 47,7    |
| $\overline{MH} \le 405 W$ single-ended                                   | 84,5   | 7,7     |
| MH > 405 W single-ended                                                  | 79,3   | 12,3    |
| MH ceramic double-ended                                                  | 84,5   | 7,7     |
| MH quartz double-ended                                                   | 79,3   | 12,3    |
| Organic light-emitting diode (OLED)                                      | 65,0   | 1,5     |
| Until 1 September 2023: HL G9, G4 and GY6.35                             | 19,5   | 7,7     |
| HL R7s ≤ 2 700 lm                                                        | 26,0   | 13,0    |
| Other light sources in scope not mentioned above                         | 120,0  | 1,5 (*) |
| (*) For connected light sources (CLS) a factor L = 2,0 shall be applied. |        |         |

# Table 2

# Correction factor C depending on light source characteristics

| Light source type                                    | Basic C value                         |
|------------------------------------------------------|---------------------------------------|
| Non-directional (NDLS) not operating on mains (NMLS) | 1,00                                  |
| Non-directional (NDLS) operating on mains (MLS)      | 1,08                                  |
| Directional (DLS) not operating on mains (NMLS)      | 1,15                                  |
| Directional (DLS) operating on mains (MLS)           | 1,23                                  |
| Special light source feature                         | Bonus on C                            |
| FL or HID with CCT > 5 000 K                         | +0,10                                 |
| FL with CRI > 90                                     | 0,10                                  |
| HID with second envelope                             | +0,10                                 |
| MH NDLS > 405 W with non-clear envelope              | +0,10                                 |
| DLS with anti-glare shield                           | +0,20                                 |
| Colour-tuneable light source (CTLS)                  | +0,10                                 |
| High luminance light sources (HLLS)                  | +0,0058 • Luminance-<br>HLLS - 0,0167 |

Where applicable, bonuses on correction factor C are cumulative.

The bonus for HLLS shall not be combined with the basic C-value for DLS (basic C-value for NDLS shall be used for HLLS).

Light sources that allow the end-user to adapt the spectrum and/or the beam angle of the emitted light, thus changing the values for useful luminous flux, colour rendering index (CRI) and/or correlated colour temperature (CCT), and/or changing the directional/non-directional status of the light source, shall be evaluated using the reference control settings.

The standby power  $P_{sb}$  of a light source shall not exceed 0,5 W.

The networked standby power  $P_{net}$  of a connected light source shall not exceed 0.5 W.

The allowable values for  $P_{sb}$  and  $P_{net}$  shall not be added together.

(b) From 1 September 2021, the values set in Table 3 for the minimum energy efficiency requirements of a separate control gear operating at full-load shall apply:

| Declared output power of the control gear (P <sub>cg</sub> ) or declared power of the light source (P <sub>ls</sub> ) in <i>W</i> , as applicable | Minimum energy efficiency                                      |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--|
| Control gear for HL light sources                                                                                                                 |                                                                |  |
| all wattages P <sub>cg</sub>                                                                                                                      | 0,91                                                           |  |
| Control gear for FL light sources                                                                                                                 |                                                                |  |
| $P_{ls} \leq 5$                                                                                                                                   | 0,71                                                           |  |
| $5 < P_{ls} \le 100$                                                                                                                              | $P_{ls}/(2 \times \sqrt{(P_{ls}/36)} + 38/36 \times P_{ls}+1)$ |  |
| $100 < P_{ls}$                                                                                                                                    | 0,91                                                           |  |
| Control gear for HID light sources                                                                                                                |                                                                |  |
| $P_{ls} \leq 30$                                                                                                                                  | 0,78                                                           |  |
| $30 < P_{ls} \le 75$                                                                                                                              | 0,85                                                           |  |
| $75 < P_{ls} \le 105$                                                                                                                             | 0,87                                                           |  |
| $105 < P_{ls} \le 405$                                                                                                                            | 0,90                                                           |  |
| $405 < P_{ls}$                                                                                                                                    | 0,92                                                           |  |
| Control gear for LED or OLED light sources                                                                                                        |                                                                |  |
| all wattages P <sub>cg</sub>                                                                                                                      | $P_{cg^{0,81}}/(1,09 \times P_{cg^{0,81}} + 2,10)$             |  |

|         |                   | Table 3      |           |                  |
|---------|-------------------|--------------|-----------|------------------|
| Minimum | energy efficiency | for separate | control g | ear at full-load |

Multi-wattage separate control gears shall comply with the requirements in Table 3 according to the maximum declared power on which they can operate.

The no-load power  $P_{no}$  of a separate control gear shall not exceed 0,5 W. This applies only to separate control gear for which the manufacturer or importer has declared in the technical documentation that it has been designed for no-load mode.

The standby power  $P_{sb}$  of a separate control gear shall not exceed 0,5 W.

The networked standby power  $P_{net}$  of a connected separate control gear shall not exceed 0.5 W. The allowable values for  $P_{sb}$  and  $P_{net}$  shall not be added together.

# 2. Functional requirements

From 1 September 2021, the functional requirements specified in Table 4 shall apply for light sources:

| Functional requirements for light sources                                                                |                                                                                                                                                                                                                                                                                                                                                                                                            |  |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Colour rendering                                                                                         | CRI $\geq$ 80 (except for HID with $\Phi_{use} > 4$ klm and for light sources intended for use in out-<br>door applications, industrial applications or other applications where lighting standards<br>allow a CRI< 80, when a clear indication to this effect is shown on the light source packag-<br>ing and in all relevant printed and electronic documentation)                                       |  |
| Displacement factor<br>(DF, $\cos \varphi_1$ ) at power<br>input P <sub>on</sub> for LED and<br>OLED MLS | No limit at $P_{on} \le 5$ W,<br>DF $\ge 0.5$ at 5 W $< P_{on} \le 10$ W,<br>DF $\ge 0.7$ at 10 W $< P_{on} \le 25$ W<br>DF $\ge 0.9$ at 25 W $< P_{on}$                                                                                                                                                                                                                                                   |  |
| Lumen maintenance<br>factor (for LED and<br>OLED)                                                        | The lumen maintenance factor $X_{LMF}$ % after endurance testing according to Annex V shall be<br>at least $X_{LMF,MIN}$ % calculated as follows:<br>$X_{LMF,MIN}$ % = $100 \times e \frac{(3000 \times \ln(0.7))}{L_{70}}$<br>where $L_{70}$ is the declared $L_{70}B_{50}$ lifetime (in hours)<br>If the calculated value for $X_{LMF,MIN}$ exceeds 96,0%, an $X_{LMF,MIN}$ value of 96,0% shall be used |  |
| Survival factor (for<br>LED and OLED)                                                                    | Light sources should be operational as specified in row 'Survival factor (for LED and OLED)'<br>of Annex IV, Table 6, following the endurance testing given in Annex V.                                                                                                                                                                                                                                    |  |
| Colour consistency for<br>LED and OLED light<br>sources                                                  | Variation of chromaticity coordinates within a six-step MacAdam ellipse or less.                                                                                                                                                                                                                                                                                                                           |  |
| Flicker for LED and<br>OLED MLS                                                                          | P <sub>st</sub> LM ≤ 1,0 at full-load                                                                                                                                                                                                                                                                                                                                                                      |  |
| Stroboscopic effect for<br>LED and OLED MLS                                                              | SVM $\leq$ 0,4 at full-load (except for HID with $\Phi_{use} > 4$ klm and for light sources intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80)                                                                                                                                                                              |  |

# Table 4

3. Information requirements

From 1 September 2021 the following information requirements shall apply:

(a) Information to be displayed on the light source itself

For all light sources, except CTLS, LFL, CFLni, other FL, and HID, the value and physical unit of the useful luminous flux (lm) and correlated colour temperature (K) shall be displayed in a legible font on the surface if, after the inclusion of safety-related information, there is sufficient space available for it without unduly obstructing the light emission.

For directional light sources, the beam angle (°) shall also be indicated.

If there is room for only two values, the useful luminous flux and the correlated colour temperature shall be displayed. If there is room for only one value, the useful luminous flux shall be displayed.

- (b) Information to be visibly displayed on the packaging
  - (1) Light source placed on the market, not in a containing product

If a light source is placed on the market, not in a containing product, in a packaging containing information to be visibly displayed at a point-of-sale prior to its purchase, the following information shall be clearly and prominently displayed on the packaging:

- (a) the useful luminous flux ( $\Phi_{use}$ ) in a font at least twice as large as the display of the on-mode power ( $P_{on}$ ), clearly indicating if it refers to the flux in a sphere (360°), in a wide cone (120°) or in a narrow cone (90°);
- (b) the correlated colour temperature, rounded to the nearest 100 K, also expressed graphically or in words, or the range of correlated colour temperatures that can be set;
- (c) the beam angle in degrees (for directional light sources), or the range of beam angles that can be set;
- (d) electrical interface details, e.g. cap- or connector-type, type of power supply (e.g. 230 V AC 50 Hz, 12 V DC);
- (e) the  $L_{70}B_{50}$  lifetime for LED and OLED light sources, expressed in hours;
- (f) the on-mode power (P<sub>on</sub>), expressed in W;
- (g) the standby power (P<sub>sb</sub>), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;
- (h) the networked standby power (P<sub>net</sub>) for CLS, expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging;
- (i) the colour rendering index, rounded to the nearest integer, or the range of CRI-values that can be set;
- (j) if CRI< 80, and the light source is intended for use in outdoor applications, industrial applications or other applications where lighting standards allow a CRI< 80, a clear indication to this effect. For HID light sources with useful luminous flux > 4 000 lm, this indication is not mandatory;

- (k) if the light source is designed for optimum use in non-standard conditions (such as ambient temperature Ta # 25 °C or specific thermal management is necessary): information on those conditions;
- a warning if the light source cannot be dimmed or can be dimmed only with specific dimmers or with specific wired or wireless dimming methods. In the latter cases a list of compatible dimmers and/or methods shall be provided on the manufacturer's website;
- (m) if the light source contains mercury: a warning of this, including the mercury content in mg rounded to the first decimal place;
- (n) if the light source is within the scope of Directive 2012/19/EU, without prejudice to marking obligations pursuant to Article 14(4) of Directive 2012/19/EU, or contains mercury: a warning that it shall not be disposed of as unsorted municipal waste.

Items (a) to (d) shall be displayed on the packaging in the direction meant to face prospective buyer; for other items this is also recommended, if space permits.

For light sources that can be set to emit light with different characteristics, the information shall be reported for the reference control settings. In addition, a range of obtainable values may be indicated.

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

(2) Separate control gears:

If a separate control gear is placed on the market as a stand-alone product and not as a part of a containing product, in a packaging containing information to be visibly displayed to potential buyers, prior to their purchase, the following information shall be clearly and prominently displayed on the packaging:

- (a) the maximum output power of the control gear (for HL, LED and OLED) or the power of the light source for which the control gear is intended (for FL and HID);
- (b) the type of light source(s) for which it is intended;
- (c) the efficiency in full-load, expressed in percentage;
- (d) the no-load power (P<sub>no</sub>), expressed in W and rounded to the second decimal, or the indication that the gear is not intended to operate in no-load mode. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;
- (e) the standby power (P<sub>sb</sub>), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;
- (f) where applicable, the networked standby power (P<sub>net</sub>), expressed in W and rounded to the second decimal. If the value is zero, it may be omitted from the packaging but shall nonetheless be declared in the technical documentation and on websites;
- (g) a warning if the control gear is not suitable for dimming of light sources or can be used only with specific types of dimmable light sources or using specific wired or wireless dimming methods. In the latter cases, detailed information on the conditions in which the control gear can be used for dimming shall be provided on the manufacturer's or importer's website;
- (h) a QR-code redirecting to a free-access website of the manufacturer, importer or authorised representative, or the internet address for such a website, where full information on the control gear can be found.

The information does not need to use the exact wording on the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

- (c) Information to be visibly displayed on a free-access website of the manufacturer, importer or authorised representative
  - (1) Separate control gears:

For any separate control gear that is placed on the EU market, the following information shall be displayed on at least one free-access website:

- (a) the information specified in point 3(b)(2), except 3(b)(2)(h);
- (b) the outer dimensions in mm;
- (c) the mass in grams of the control gear, without packaging, and without lighting control parts and non-lighting parts, if any and if they can be physically separated from the control gear;
- (d) instructions on how to remove lighting control parts and non-lighting parts, if any, or how to switch them off or minimise their power consumption during control-gear testing for market surveillance purposes;
- (e) if the control gear can be used with dimmable light sources, a list of minimum characteristics that the light sources should have to be fully compatible with the control gear during dimming, and possibly a list of compatible dimmable light sources;
- (f) recommendations on how to dispose of it at the end of its life in line with Directive 2012/19/EU.

The information does not need to use the exact wording in the list above. Alternatively, it may be displayed in the form of graphs, drawings or symbols.

- (d) Technical documentation
  - (1) Separate control gears:

The information specified in point 3(c)(2) of this Annex shall also be contained in the technical documentation file drawn up for the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC.

(e) Information for products specified in point 3 of Annex III

For the light sources and separate control gears specified in point 3 of Annex III the intended purpose shall be stated in the technical documentation for compliance assessment as per Article 5 of this Regulation and on all forms of packaging, product information and advertisement, together with an explicit indication that the light source or separate control gear is not intended for use in other applications.

The technical documentation file drawn up for the purposes of conformity assessment, in accordance with Article 5 of this Regulation shall list the technical parameters that make the product design specific to qualify for the exemption.

In particular for light sources indicated in point 3(p) of Annex III it shall be stated: 'This light source is only for use by photo sensitive patients. Use of this light source will lead to increased energy cost compared to an equivalent more energy efficient product.'

#### ANNEX III

### Exemptions

- 1. This Regulation shall not apply to light sources and separate control gears specifically tested and approved to operate:
  - (a) in potentially explosive atmospheres, as defined in Directive 2014/34/EU of the European Parliament and of the Council (<sup>1</sup>);
  - (b) for emergency use, as set out in Directive 2014/35/EU of the European Parliament and of the Council (<sup>2</sup>);
  - (c) in radiological and nuclear medicine installations, as defined in Article 3 of Council Directive 2009/71/EURATOM (<sup>3</sup>);
  - (d) in or on military or civil defence establishments, equipment, ground vehicles, marine equipment or aircraft, as set out in Member States' regulations or in documents issued by the European Defence Agency;
  - (e) in or on motor vehicles, their trailers and systems, interchangeable towed equipment, components and separate technical units as set out in Regulation (EC) No 661/2009 (\*), (EU) No 167/2013 (5) and (EU) No 168/2013 of the European Parliament and of the Council (6);
  - (f) in or on non-road mobile machinery as set out in Regulation (EU) 2016/1628 of the European Parliament and of the Council (<sup>7</sup>) and in or on their trailers;
  - (g) in or on interchangeable equipment as set out in Directive 2006/42/EC of the European Parliament and of the Council (<sup>8</sup>) intended to be towed or to be mounted and fully raised from the ground or that cannot articulate around a vertical axis when the vehicle to which it is attached is in use on a road by vehicles as set out in Regulation (EU) No 167/2013;
  - (h) in or on civil aviation aircraft, as set out in Commission Regulation (EU) No 748/2012 (9);
  - (i) in railway vehicle lighting, as set out in Directive 2008/57/EC of the European Parliament and of the Council (<sup>10</sup>);

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast) (OJ L 96, 29.3.2014, p. 309).

<sup>(&</sup>lt;sup>2</sup>) Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (OJ L 96, 29.3.2014, p. 357).

<sup>(&</sup>lt;sup>3</sup>) Council Directive 2009/71/Euratom of 25 June 2009 establishing a Community framework for the nuclear safety of nuclear installations (OJ L 172, 2.7.2009, p. 18).

<sup>(\*)</sup> Regulation (EC) No 661/2009 of the European Parliament and of the Council of 13 July 2009 concerning type-approval requirements for the general safety of motor vehicles, their trailers and systems, components and separate technical units intended therefor (OJ L 200, 31.7.2009, p. 1).

<sup>(&</sup>lt;sup>5</sup>) Regulation (EU) No 167/2013 of the European Parliament and of the Council of 5 February 2013 on the approval and market surveillance of agricultural and forestry vehicles (OJ L 60, 2.3.2013, p. 1).

<sup>(\*)</sup> Regulation (EU) No 168/2013 of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles (OJ L 60, 2.3.2013, p. 52).

<sup>(7)</sup> Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC (OJ L 252, 16.9.2016, p. 53).

<sup>(\*)</sup> Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast) (OJ L 157, 9.6.2006, p. 24).

<sup>(&</sup>lt;sup>9</sup>) Commission Regulation (EU) No 748/2012 of 3 August 2012 laying down implementing rules for the airworthiness and environmental certification of aircraft and related products, parts and appliances, as well as for the certification of design and production organisations (OJ L 224, 21.8.2012, p. 1).

<sup>(&</sup>lt;sup>10</sup>) Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (Recast) (OJ L 191, 18.7.2008, p. 1).

- (j) in marine equipment, as set out in Directive 2014/90/EU of the European Parliament and of the Council (11);
- (k) in medical devices, as set out in Council Directive 93/42/EEC (<sup>12</sup>) or Regulation (EU) 2017/745 of the European Parliament and of the Council (<sup>13</sup>) and in vitro medical devices as set out in Directive 98/79/EC of the European Parliament and of the Council (<sup>14</sup>).

For the purpose of this point, 'specifically tested and approved' means that the light source or separate control gear:

- has been specifically tested for the mentioned operating condition or application, according to the European legislation mentioned or related implementing measures, or relevant European or international standards, or, in the absence of these, according to relevant Member States legislation; and
- is accompanied by evidence, to be included in the technical documentation, in the form of a certificate, a type approval mark, a test report, that the product has been specifically approved for the mentioned operating condition or application; and
- is placed on the market specifically for the mentioned operating condition or application, as evidenced at least by the technical documentation, and except for point (d), information on the packaging and any advertising or marketing materials.
- 2. In addition, this Regulation shall not apply to:
  - (a) double-capped fluorescent T5 light sources with power  $P \le 13$  W;
  - (b) electronic displays (e.g. televisions, computer monitors, notebooks, tablets, mobile phones, e-readers, game consoles), including displays within the scope of Commission Regulation (EU) 2019/2021 (<sup>15</sup>), and Commission Regulation (EU) No 617/2013 (<sup>16</sup>);
  - (c) light sources and separate control gears in battery-operated products, including but not limited to e.g. torches, mobile phones with an integrated torch light, toys including light sources, desk lamps operating only on batteries, armband lamps for cyclists, solar-powered garden lamps;
  - (d) light sources for spectroscopy and photometric applications, such as for example UV-VIS spectroscopy, molecular spectroscopy, atomic absorption spectroscopy, nondispersive infrared (NDIR), fourier-transform infrared (FTIR), medical analysis, ellipsometry, layer thickness measurement, process monitoring or environ-mental monitoring;
  - (e) light sources and separate control gears on bicycles and other non-motorised vehicles.
- 3. Any light source or separate control gear within the scope of this Regulation shall be exempt from the requirements of this Regulation, with the exception of the information requirements set out in point 3(e) of Annex II, if they are specifically designed and marketed for their intended use in at least one of the following applications:
  - (a) signalling (including, but not limited to, road-, railway-, marine- or air traffic- signalling, traffic control or air-field lamps);

<sup>(&</sup>lt;sup>11</sup>) Directive 2014/90/EU of the European Parliament and of the Council of 23 July 2014 on marine equipment and repealing Council Directive 96/98/EC (OJ L 257, 28.8.2014, p. 146).

<sup>(&</sup>lt;sup>12</sup>) Council Directive 93/42/EEC of 14 June 1993 concerning medical devices (OJ L 169, 12.7.1993, p. 1).

<sup>(13)</sup> Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).

<sup>(&</sup>lt;sup>14</sup>) Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices (OJ L 331, 7.12.1998, p. 1).

<sup>(&</sup>lt;sup>15</sup>) Commission Regulation (EU) 2019/2021 of 1 October 2019 laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009 (see page 241 of this Official Journal).

<sup>(&</sup>lt;sup>16</sup>) Commission Regulation (EU) No 617/2013 of 26 June 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers (OJ L 175, 27.6.2013, p. 13).

- (b) image capture and image projection (including, but not limited to, photocopying, printing (directly or in preprocessing), lithography, film and video projection, holography);
- (c) light sources with specific effective ultraviolet power > 2 mW/klm and intended for use in applications requiring high UV-content;
- (d) light sources with a peak radiation around 253,7 nm and intended for germicidal use (destruction of DNA);
- (e) light sources emitting 5 % or more of total radiation power of the range 250-800 nm in the range of 250-315 nm and/or 20 % or more of total radiation power of the range 250-800 nm in the range of 315-400 nm, and intended for disinfection or fly trapping;
- (f) light sources with the primary purpose of emitting radiation around 185,1 nm and intended to be used for the generation of ozone;
- (g) light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 400-480 nm, and intended for coral zooxanthellae symbioses;
- (h) FL light sources emitting 80% or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;
- (i) HID light sources emitting 40 % or more of total radiation power of the range 250-800 nm in the range of 250-400 nm, and intended for sun-tanning;
- (j) light sources with a photosynthetic efficacy > 1,2  $\mu$ mol/J, and/or emitting 25% or more of total radiation power of the range 250-800 nm in the range of 700-800 nm, and intended for use in horticulture;
- (k) HID light sources with correlated colour temperature CCT > 7 000 K and intended for use in applications requiring such a high CCT;
- (l) light sources with a beam angle of less than 10° and intended for spot-lighting applications requiring a very narrow light beam;
- (m) halogen light sources with cap-type G9.5, GX9.5, GY9.5, GZ9.5, GZX9.5, GZY9.5, GZZ9.5, K39d, G9.5HPL, G16d, GES/E40 (low voltage (24V) silver crown only), GX16, GX16d, GY16, G22, G38, GX38, GX38Q, P28s, P40s, PGJX28, PGJX 36, PGJX50, R7s with a luminous flux > 12 000 lm, QXL, designed and marketed specifically for scene-lighting use in film studios, TV studios, and photographic studios, or for stage-lighting use in theatres, discos and during concerts or other entertainment events;
- (n) colour-tuneable light sources that can be set to at least the colours listed in this point and which have for each of these colours, measured at the dominant wavelength, a minimum excitation purity of:

| Blue  | 440nm — 490nm | 90 % |
|-------|---------------|------|
| Green | 520nm — 570nm | 65 % |
| Red   | 610nm — 670nm | 95 % |

and are intended for use in applications requiring high-quality coloured light;

(o) light sources accompanied by an individual calibration certificate detailing the exact radiometric flux and/or spectrum under specified conditions, and intended for use in photometric calibration (of e.g. wavelength, flux, colour temperature, colour rendering index), or for laboratory use or quality control applications for the evaluation of coloured surfaces and materials under standard viewing conditions (e.g. standard illuminants);

- (p) light sources provided specifically for use by photosensitive patients, to be sold in pharmacies and other authorised selling points (e.g. suppliers of disability products), upon presentation of a medical prescription;
- (q) incandescent light sources (not including halogen light sources) fulfilling all of the following conditions: power  $\leq$  40 W, length  $\leq$  60 mm, diameter  $\leq$  30 mm, declared suitable for operation at ambient temperature  $\geq$  300 °C, and intended for use in high temperature applications such as ovens;
- (r) halogen light sources fulfilling all of the following conditions: cap-type G4, GY6.35 or G9, power  $\leq$  60 W, declared suitable for operation at ambient temperature  $\geq$  300 °C, and intended for use in high temperature applications such as ovens;
- (s) halogen light sources with blade contact-, metal lug-, cable-, litz wire- or non-standard customised electrical interface, specifically designed and marketed for industrial or professional electro-heating equipment (e.g. stretch blow-moulding process in PET-Industry, 3D-printing, gluing, inks, paint and coating hardening);
- (t) halogen light sources fulfilling all of the following conditions: R7s cap,  $CCT \le 2500$  K, length not in the ranges 75-80 mm and 110-120 mm, specifically designed and marketed for industrial or professional electroheating equipment (e.g. stretch blow-moulding process in PET-Industry, 3D-printing, gluing, inks, paint and coating hardening);
- (u) single capped fluorescent lamps (CFLni) having a diameter of 16 mm (T5), 2G11 4 pin base, with CCT = 3 200 K and chromaticity coordinates x = 0,415 y = 0,377, or with CCT = 5 500 K and chromaticity coordinates x = 0,330 y = 0,335, specifically designed and marketed for studio and video applications for traditional filmmaking;
- (v) LED or OLED light sources, complying with the definition of 'original works of art' as defined in Directive 2001/84/EC of the European Parliament and of the Council (<sup>17</sup>), made by the artist him/herself in a limited number below 10 pieces;
- (w) white light sources which
  - are designed and marketed specifically for scene-lighting use in film-studios, TV-studios and locations, and photographic-studios and locations, or for stage-lighting use in theatres, during concerts or other entertainment events;

and which:

- (2) provide two or more of the following specifications:
  - (a) LED with high CRI > 90;
  - (b) GES/E40, K39d socket with changeable Colour Temperature down to 1 800 K (undimmed), used with low voltage power supply;
  - (c) LED rated at 180W and greater and arranged to direct output to an area smaller than the light emitting surface;
  - (d) DWE lamp type which is a tungsten lamp defined by its wattage (650 W) voltage (120 V) and terminal type (pressure screw terminal);
  - (e) white bi-colour LED sources;
  - (f) fluorescent tubes: Min BI Pin T5 and Bi Pin T12 with CRI  $\ge$  85 and CCT 2 900, 3 000, 3 200, 5 600 or 6 500 K.

<sup>(&</sup>lt;sup>17</sup>) Directive 2001/84/EC of the European Parliament and of the Council of 27 September 2001 on the resale right for the benefit of the author of an original work of art (OJ L 272, 13.10.2001, p. 32).

4. CLS and CSCG designed and marketed specifically for scene-lighting use in film-studios, TV-studios and locations, and photographic studios and locations, or for stage-lighting use in theatres, discos and during concerts or other entertainment events, for connection to high speed control networks (utilising signalling rates of 250 000 bits per second and higher) in always-listening mode, shall be exempt from the requirements on standby (P<sub>sb</sub>) and on networked standby (P<sub>net</sub>) of points 1(a) and 1(b) of Annex II.

### ANNEX IV

### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities. These tolerances shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, the authorities of the Member States shall apply the following procedure:

1. The Member State authorities shall verify one single unit of the model for points 2(a) and 2(b) of this Annex.

The Member State authorities shall verify 10 units of the light source model or 3 units of the separate control gear model. The verification tolerances are laid down in Table 6 of this Annex.

- 2. The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and
  - (c) when the authorities of the Member State test the units of the model, the determined values comply with the respective verification tolerances as given in Table 6 of this Annex, where 'determined value' means the arithmetic mean over the tested units of the measured values for a given parameter or the arithmetic mean of parameter values calculated from measured values.
- 3. If the results referred to in point 2(a), (b) or (c) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 4. The authorities of the Member State shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision is taken on the non-compliance of the model in accordance with point 3 of this Annex.

The authorities of the Member State shall only apply the verification tolerances that are set out in Table 6 and shall use only the procedure described in this Annex. For the parameters in Table 6, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

#### Table 6

### Verification tolerances

| Parameter                        | Sample size | Verification tolerances                                                       |
|----------------------------------|-------------|-------------------------------------------------------------------------------|
| Full-load on-mode power Pon [W]: |             |                                                                               |
| $P_{on} \le 2W$                  | 10          | The determined value shall not exceed the declared value by more than 0,20 W. |

| Parameter                                                                                                            | Sample size | Verification tolerances                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $2W \le P_{on} \le 5W$                                                                                               | 10          | The determined value shall not exceed the declared value by more than 10 %.                                                                                                                         |
| $5W < P_{on} \le 25W$                                                                                                | 10          | The determined value shall not exceed the declared value by more than 5 %.                                                                                                                          |
| $25W < P_{on} \le 100W$                                                                                              | 10          | The determined value shall not exceed the declared value by more than 5 %.                                                                                                                          |
| $100W < P_{on}$                                                                                                      | 10          | The determined value shall not exceed the declared value by more than 2,5 %.                                                                                                                        |
| Displacement factor [0-1]                                                                                            | 10          | The determined value shall not be less than the declared value minus 0,1 units.                                                                                                                     |
| Useful luminous flux $\Phi_{use}$ [lm]                                                                               | 10          | The determined value shall not be less than the declared value minus 10 %.                                                                                                                          |
| No-load power P <sub>no</sub> , Standby power<br>P <sub>sb</sub> and Networked standby power<br>P <sub>net</sub> [W] | 10          | The determined value shall not exceed the declared value by more than 0,10 W.                                                                                                                       |
| CRI [0-100]                                                                                                          | 10          | The determined value shall not be less than the declared value by more than 2,0 units.                                                                                                              |
| Flicker [P <sub>st</sub> LM] and stroboscopic<br>effect [SVM]                                                        | 10          | The determined value shall not exceed the declared value by more than 10 %.                                                                                                                         |
| Colour consistency [MacAdam ellips<br>steps]                                                                         | 10          | The determined number of steps shall not exceed the declared<br>number of steps. The centre of the MacAdam ellipse shall be the<br>centre declared by the supplier with a tolerance of 0,005 units. |
| Beam angle (degrees)                                                                                                 | 10          | The determined value shall not deviate from the declared value by more than 25 %.                                                                                                                   |
| Control gear efficiency [0-1]                                                                                        | 3           | The determined value shall not be less than the declared value minus 0,05 units.                                                                                                                    |
| Lumen maintenance factor (for LED and OLED)                                                                          | 10          | The determined $X_{LMF}$ % of the sample following the test in Annex V of this Regulation shall not be less than $X_{LMF, MIN}$ % ( <sup>1</sup> ).                                                 |
| Survival factor (for LED and OLED)                                                                                   | 10          | At least 9 light sources of the test sample must be operational after completing the test in Annex V of this Regulation.                                                                            |
| Excitation purity [%]                                                                                                | 10          | The determined value shall not be less than the declared value minus 5 %.                                                                                                                           |
| Correlated colour temperature [K]                                                                                    | 10          | The determined value shall not deviate from the declared value by more than 10 %.                                                                                                                   |

(1) There is no tolerance associated with this metric, as it is a fixed requirement and it is up to the manufacturer to declare an  $L_{70}B_{50}$  value to meet it.

For light sources with linear geometry which are scalable but of very long length, such as LED strips or strings, verification testing of market surveillance authorities shall consider a length of 50 cm, or, if the light source is not scalable there, the nearest value to 50 cm. The light source manufacturer or importer shall indicate which separate control gear is suitable for this length. When verifying if a product is a light source, market surveillance authorities shall compare the measured values for chromaticity coordinates (x and y), luminous flux, luminous flux density, and colour rendering index directly with the limit values set out in the definition for light source of Article 2 of this Regulation, without applying any tolerances. If any of the 10 units in the sample satisfies the conditions for being a light source, the product model shall be considered to be a light source.

Light sources that allow the end-user to control, manually or automatically, directly or remotely, the luminous intensity, colour, correlated colour temperature, spectrum, and/or beam angle of the emitted light shall be evaluated using the reference control settings.

#### ANNEX V

#### Functionality after endurance testing

Models of LED- and OLED- light sources shall undergo endurance testing to verify their lumen maintenance and survival factor. This endurance testing consists of the test method outlined below. The authorities of a Member State shall test 10 units of the model for this test.

The endurance test for LED and OLED light sources shall be conducted as follows:

- (a) Ambient conditions and test setup:
  - (i) The switching cycles are to be conducted in a room with an ambient temperature of  $25 \pm 10$  °C and an average air velocity of less than 0,2 m/s.
  - (ii) The switching cycles on the sample shall be conducted in free air in a vertical base-up position. However, if a manufacturer or importer has declared the light source suitable for use in a specific orientation only, then the sample shall be mounted in that orientation.
  - (iii) The applied voltage during the switching cycles shall have a tolerance within 2 %. The total harmonic content of the supply voltage shall not exceed 3 %. Standards provide guidance on the supply voltage source. Light sources designed to be operated on mains voltage shall be tested at 230 V, 50 Hz supply, even if the products are able to be operated on variable supply conditions.
- (b) Endurance test method:
  - (i) Initial flux measurement: measure the luminous flux of the light source prior to starting the endurance test switching cycle.
  - (ii) Switching cycles: operate the light source for 1 200 cycles of repeated, continuous switching cycles without interruption. One complete switching cycle consists of 150 minutes of the light source switched ON at full power followed by 30 minutes of the light source switched OFF. The hours of operation recorded (i.e. 3 000 hours) include only the periods of the switching cycle when the light source was switched ON, i.e. the total test time is 3 600 hours.
  - (iii) Final flux measurement: at the end of the 1 200 switching cycles, note if any light sources have failed (see 'Survival factor' in Annex IV, Table 6 of this Regulation) and measure the luminous flux of the light sources that have not failed.
  - (iv) For each of the units in the sample which have not failed, divide the measured final flux by the measured initial flux. Average the resulting values over all the units that did not fail to compute the determined value for the lumen maintenance factor  $X_{LMF}$ %.

# ANNEX VI

### Benchmarks

For the environmental aspects that were considered significant and are quantifiable, the best available technology on the market, at the time of entry into force of this Regulation, is indicated below.

The best available technology on the market for light sources in terms of their efficacy based on useful luminous flux was identified as follows:

- Mains voltage non-directional light sources: 120-140 lm/W
- Mains voltage directional light sources: 90-100 lm/W
- Directional light sources not operating on the mains: 85- 95 lm/W
- Linear light sources (tubes): 140-160 lm/W

The best available technology on the market for separate control gears has an energy efficiency of 95 %.

Features required in certain applications, e.g. a high colour rendering, might prevent products offering those features from achieving these benchmarks.

The best available technology on the market for light sources and separate control gears do not have any mercury content.

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### COMMISSION REGULATION (EU) 2019/2021

#### of 1 October 2019

laying down ecodesign requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) No 642/2009

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (1), and in particular Article 15(1) thereof,

Whereas:

- (1) Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade, in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) The Commission established ecodesign requirements for televisions in Commission Regulation (EC) No 642/2009 <sup>(2)</sup> and pursuant to that Regulation, the Commission should review the Regulation in the light of technological progress.
- (3) The Communication from the Commission COM(2016) 773 (<sup>3</sup>) (ecodesign working plan), established by the Commission in application of Article 16(1) of Directive 2009/125/EC, sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Regulation (EC) No 642/2009.
- (4) Measures from the Ecodesign Working Plan have an estimated potential to deliver a total in excess of 260 TWh of annual primary energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Electronic displays are one of the product groups listed in the working plan.
- (5) Pursuant to Article 6 of Regulation (EC) No 642/2009, the Commission has reviewed the Regulation in light of technological progress and analysed the technical, environmental and economic aspects of televisions and other electronic displays. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- (6) The review concluded that there was a need for the introduction of new ecodesign energy-related requirements for televisions and that the same requirements should also apply to other displays, such as computer monitors, because of the rapidly increasing functionality overlap between different display types. Projectors use very different technologies and consequently should be out of scope of this Regulation.
- (7) Digital signage displays are used in public spaces such as airports, metro and train stations, retail stores, shop windows, restaurants, museums, hotels, conference centres or in prominent positions outside buildings and represent a relevant emerging market. Their energy needs are different and generally higher than those of other electronic displays because they are often used in luminous places and continuously on. Minimum requirements for digital signage displays in on-mode should be evaluated once additional data will be available, however they should at least have minimum requirements on off, standby and networked standby modes and on material efficiency.

<sup>(1)</sup> OJ L 285, 31.10.2009, p. 10.

<sup>(2)</sup> Commission Regulation (EC) No 642/2009 of 22 July 2009 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for televisions (OJ L 191, 23.7.2009, p. 42).

<sup>(3)</sup> Communication from the Commission. Ecodesign working plan 2016-2019, COM(2016) 773 final, 30.11.2016.

- (8) The annual energy consumption in 2016 of televisions in the Union constituted more than 3 % of the European Union's electricity consumption. The projected energy consumption of televisions, monitors and digital signage displays would be expected be close to 100 TWh/yr in 2030. This Regulation, together with the accompanying energy labelling regulation, is estimated to reduce the overall consumption by 39 TWh/yr by 2030.
- (9) Specific requirements should be laid down for standby, networked standby and off mode electric power demand of electronic displays. Therefore, the requirements of Commission Regulation (EC) No 1275/2008 (<sup>4</sup>) that does not apply to televisions, should no longer apply to the additional electronic displays types covered by the scope of this Regulation. Regulation (EC) No 1275/2008 should be amended accordingly.
- (10) Electronic displays for professional use such as video-editing, computer-aided design, graphics or for the broadcast sector, possess enhanced performance and very specific features that, although usually involving higher energy use, should be not subject to on-mode energy efficiency requirements set for more generic products.
- (11)The Communication on the circular economy <sup>(3)</sup> and the Communication on the ecodesign working plan (°) underline the importance of using the ecodesign framework to support the move towards a more resource efficient and circular economy. Recital (11) and Article 4 of Directive 2012/19/EU of the European Parliament and of the Council (7) refer as well to Directive 2009/125/EC and indicate that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste electrical and electronic equipment (WEEE) by tackling the issues upstream, thus facilitating the objectives of waste prevention and recovery in Member States as from Directive (EU) 2018/851 of the European Parliament and of the Council (8). In addition, Decision No 1386/2013/EU of the European Parliament and of the Council (9) on a General Union Environment Action Programme to 2020 includes the goal 'to turn the Union into a resource-efficient, green and competitive lowcarbon economy'. Implementable and enforceable requirements at the product design phase may be appropriate for optimising resource and material efficiency at end of life. Finally, in accordance with the Union action plan for the Circular Economy (10), the Commission should make sure that special emphasis is placed on aspects relevant to the circular economy when setting out or revising ecodesign criteria. This Regulation should therefore lay down appropriate non-energy related requirements contributing to circular economy objectives including requirements to facilitate repair and the availability of spare parts.
- (12) Liquid crystal screens (LCD) with a screen area greater than 100 square centimetres are in the scope of the requirements set in Article 8 and Annex VII of the Directive 2012/19/EU in relation to the selective treatment for materials and components of WEEE which means that such displays need to be removed from the product integrating them. Considering, in addition, that screens with a screen area smaller than or equal to 100 square centimetres have very limited energy use, all such electronic displays should be outside the scope of this Regulation both for energy and for requirements contributing to circular economy objectives.
- (13) Once delivered to an electrical and electronic equipment waste collection facility at the end of their life, televisions, computer monitors, digital signage displays, professional displays, broadcast displays, security displays, as well as displays integrated into tablets, 'all-in-one' desktop or portable computers are, generally, not distinguishable from each other. Therefore they should all be subject to the same requirements for proper end of life treatment and they should also facilitate circular economy objectives. However electronic displays integrated into

<sup>(4)</sup> Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode, and networked standby, electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p. 45).

<sup>(&</sup>lt;sup>5</sup>) Communication from the Commission to the European Parliament, the Council, the European Economic Social Committee and the Committee of the Regions: Closing the loop — An EU action plan for the Circular Economy (COM(2015) 614 final of 2.12.2015).

<sup>(&</sup>lt;sup>6</sup>) Communication from the Commission: Ecodesign Working Plan 2016-2019 (COM(2016) 773 final of 30.11.2016). (<sup>7</sup>) Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment

<sup>(</sup>WEEE) (OJ L 197, 24.7.2012, p. 38). (\*) Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste

<sup>(°)</sup> Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste (OJ L 150, 14.6.2018, p. 109).

<sup>(&</sup>lt;sup>9</sup>) Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet' (OJ L 354, 28.12.2013, p. 171).

<sup>(10)</sup> COM(2015) 614 final.

computers, such as tablets, laptops or all-in-one desktops, although hardly distinguishable from other electronic displays, should be covered in a review of Commission Regulation (EU) No 617/2013 (11) on computers.

- (14)Shredding of electronic displays causes large losses of resources and hinders circular economy objectives such as recovery of some rare and precious materials. Moreover, Article 8(1) and (2) of the Directive 2012/19/EU require Member States to ensure that all separately collected waste undergoes proper treatment including, as a minimum, a selective treatment of a number of components - typically present in electronic displays - in preparation for recovery or recycling and before schredding. Dismantling of at least the specific components listed in Annex VII of that Directive should therefore be facilitated. Furthermore, Article 15 makes provision for information to be provided free of charge by producers to facilitate the preparation for re-use and the correct and environmentally sound treatment of WEEE, which can be provided using a voluntary electronic platform (12).
- Presence of halogenated flame retardants represents a major issue in the recycling of plastics of electronic dis-(15)plays. Some halogenated compounds have been restricted by Directive 2011/65/EU of the European Parliament and of the Council (13) because of their high toxicity, but may be still found in old displays and others are still allowed. Control on maximum content of non permitted compounds in recycled plastic is not cost-effective, resulting in all being incinerated. Alternative solutions would exist for the bulk of the plastic part in an electronic display, such as the enclosure and the stand, permitting higher yields of recycled plastics. Use of halogenated flame retardants in these parts should be limited.
- Presence of cadmium, a highly toxic and carcinogenic substance in display panels is an additional obstacle to (16)efficient management of the waste stream. Use of certain hazardous substances in electrical and electronic equipment, including cadmium, is restricted by Directive 2011/65/EU. Use of cadmium in electronic displays, however, is among the applications in Annex III exempted from the restriction for a limited time. A specific marking on displays that contain cadmium, to facilitate the correct and environmentally sound treatment at end of life, should therefore be provided by manufacturers.
- (17)The relevant product parameters should be measured using reliable, accurate and reproducible methods, which take into account recognised state-of-the-art measurement methods and, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (14).
- (18)In line with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (19) To facilitate compliance checks, manufacturers, importers or authorised representatives should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation. For market surveillance purposes, manufacturers, importers or authorised representatives should be allowed to refer to the product database if the technical documentation as per Commission Delegated Regulation (EU) 2019/2013 (15) contains the same information.
- To improve the effectiveness of this Regulation and to protect consumers, products that automatically alter their (20)performance in test conditions to improve the declared parameters should be prohibited from being placed on the market.

<sup>(1)</sup> Commission Regulation (EU) No 617/2013 of 26 June 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for computers and computer servers (OJ L 175, 27.6.2013, p. 13).

<sup>(12)</sup> Information for Recyclers — I4R' platform for the exchange of information between manufacturers of electrical and electronic equip-(1) ment (EEE) and recyclers of Waste EEE: http://www.i4r-platform.eu.
(1) Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain haz-

ardous substances in electrical and electronic equipment (OJ L 174, 1.7.2011, p. 88).

<sup>(&</sup>lt;sup>14</sup>) Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(15)</sup> Commission Delegated Regulation (EU) 2019/2013 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of electronic displays and repealing Commission Delegated Regulation (EU) No 1062/2010 (see page 1 of this Official Journal).

- (21) In addition to the legally binding requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on products environmental performance over their life-cycle subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex I, part 3, point (2).
- (22) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should take into account the fast rate of technological progress in the products covered by this Regulation.
- (23) Regulation (EC) No 642/2009 should therefore be repealed.
- (24) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19 of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

# Article 1

#### Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market and putting into service of electronic displays, including televisions, monitors and digital signage displays.

- 2. This Regulation shall not apply to the following:
- (a) any electronic display with a screen area smaller than or equal to 100 square centimetres;
- (b) projectors;
- (c) all-in-one video conference systems;
- (d) medical displays;
- (e) virtual reality headsets;
- (f) displays integrated or to be integrated into products listed into Article 2, point 3(a) and point 4 of Directive 2012/19/EU;
- (g) displays that are components or subassemblies of products covered by implementing measures adopted under Directive 2009/125/EC.
- 3. The requirements in points A and B of Annex II shall not apply to the following displays:
- (a) broadcast displays;
- (b) professional displays;
- (c) security displays;
- (d) digital interactive whiteboards;
- (e) digital photo frames;
- (f) digital signage displays.
- 4. The requirements in points A, B and C of Annex II shall not apply to the following displays:
- (a) status displays;
- (b) control panels.

# Article 2

#### Definitions

For the purpose of this Regulation the following definitions shall apply:

- (1) 'electronic display' means a display screen and associated electronics that, as its primary function, displays visual information from wired or wireless sources;
- (2) 'television' means an electronic display designed primarily for the display and reception of audiovisual signals and which consists of an electronic display and one or more tuners/receivers;
- (3) 'tuner/receiver' means an electronic circuit that detects television broadcast signal, such as terrestrial digital or satellite, but not internet unicast, and facilitates the selection of a TV channel from a group of broadcast channels;
- (4) 'monitor' or 'computer monitor' or 'computer display' means an electronic display intended for one person for close viewing such as in a desk-based environment;
- (5) '*digital signage display*' means an electronic display that is designed primarily to be viewed by multiple people in non-desktop based and non domestic environments. Its specifications shall include all of the following features:
  - (a) unique identifier to enable addressing a specific display screen;
  - (b) a function disabling unauthorised access to the display settings and displayed image;
  - (c) network connection (encompassing a hard-wired or wireless interface) for controlling, monitoring or receiving the information to display from remote unicast or multicast but not broadcast sources;
  - (d) designed to be installed hanging, mounted or fixed to a physical structure for viewing by multiple people and not placed on the market with a ground stand;
  - (e) does not integrate a tuner to display broadcast signals;
- (6) 'screen area' means the viewable area of the electronic display calculated by multiplying the maximum viewable image width by the maximum viewable image height along the surface of the panel (both flat or curved);
- (7) 'digital photo frame' means an electronic display that displays exclusively still visual information;
- (8) 'projector' means an optical device for processing analogue or digital video image information, in any format, to modulate a light source and project the resulting image onto an external surface;
- (9) 'status display' means a display used to show simple but changing information such as selected channel, time or power consumption. A simple light indicator is not considered a status display;
- (10) 'control panel' means an electronic display whose main function is to display images associated with product operational status; it may provide user interaction by touch or other means to control the product operation. It may be integrated into products or specifically designed and marketed to be used exclusively with the product;
- (11) 'all-in-one video conference system' means a dedicated system designed for video conferencing and collaboration, integrated within a single enclosure, whose specification shall include all of the following features:
  - (a) support for specific videoconference protocol ITU-T H.323 or IETF SIP as delivered by the manufacturer;
  - (b) camera(s), display and processing capabilities for two-way real-time video including packet loss resilience;
  - (c) loudspeaker and audio processing capabilities for two-way real-time hands-free audio including echo cancellation;

- (d) an encryption function;
- (e) HiNA;
- (12) 'HiNA' means High Network Availability as defined in Article 2 of Regulation (EC) No 1275/2008;
- (13) 'broadcast display' means an electronic display designed and marketed for professional use by broadcasters and video production houses for video content creation. Its specifications shall include all of the following characteristics:
  - (a) colour calibration function;
  - (b) input signal analysis function for input signal monitoring and error detection, such as wave-form monitor/ vector scope, RGB cut off, facility to check the video signal status at actual pixel resolution, interlace mode and screen marker;
  - (c) Serial Digital Interface (SDI) or Video over internet Protocol (VoIP) integrated with the product;
  - (d) not intended for use in public areas;
- (14) 'digital interactive whiteboard' means an electronic display which allows direct user interaction with the displayed image. The digital interactive whiteboard is designed primarily to provide presentations, lessons or remote collaboration, including the transmission of audio and video signals. Its specification shall include all of the following features:
  - (a) primarily designed to be installed hanging, mounted on a ground stand, set on a shelf or desk or fixed to a physical structure for viewing by multiple people;
  - (b) to be necessarily used with computer software with specific functionalities to manage content and interaction;
  - (c) integrated or designed to be specifically used with a computer for running the software in point (b);
  - (d) a display screen area greater than 40 dm<sup>2</sup>;
  - (e) user interaction by finger or pen touch or other means such as hand, arm gesture or voice;
- (15) 'professional display' means an electronic display designed and marketed for professional use for editing video and graphic images. Its specification shall include all of the following features:
  - (a) a contrast ratio of at least 1000:1 measured at a perpendicular to the vertical plane of the screen and at least 60:1 measured at a horizontal viewing angle of at least 85° relative to that perpendicular and at least 83° from the perpendicular on a curved screen, with or without a screen cover glass;
  - (b) a native resolution of at least 2,3 mega pixels;
  - (c) colour Gamut support is 38,4% of CIE LUV or greater (equivalent to greater than 99% of Adobe RGB and over 100% of sRGB colour space). Shifts in colour space are allowable as long as the resultant colour space is at least 38,4% of CIE LUV. Colour and luminance uniformity shall be as required for grade 1 monitors;
- (16) 'security display' means an electronic display whose specification shall include all of the following features:
  - (a) self-monitoring function capable of communicating at least one of the following information to a remote server:
    - power status;
    - internal temperature from anti-overload thermal sensing;
    - video source;

- audio source and audio status (volume/mute);
- model and firmware version;
- (b) user-specified specialist form factor facilitating the installation of the display into professional housings or consoles;
- (17) 'integrated', referring to a display which is part of another product as a functional component, means an electronic display that is not able to be operated independently from the product and that depends on it for providing its functions, including power;
- (18) 'medical display' means an electronic display covered by the scope of:
  - (a) Council Directive 93/42/EEC (16) concerning medical devices; or
  - (b) Regulation (EU) 2017/745 of the European Parliament and of the Council (17) on medical devices; or
  - (c) Council Directive 90/385/EEC (<sup>18</sup>) on the approximation of the laws of the Member States relating to active implantable medical devices; or
  - (d) Directive 98/79/EC of the European Parliament and of the Council (19) on in vitro diagnostic medical devices; or
  - (e) Regulation (EU) 2017/746 of the European Parliament and of the Council (20) on in vitro diagnostic medical devices;
- (19) 'grade-1 monitor' means a monitor for high-level technical quality evaluation of images at key points in a production or broadcast workflow, such as image capture, post-production, transmission and storage;
- (20) 'Virtual reality headset' means a head-weareable device that provides immersive virtual reality for the wearer by displaying stereoscopic images for each eye with head motion tracking functions.

For the purposes of the Annexes, additional definitions are set out in Annex I.

### Article 3

#### **Ecodesign requirements**

The ecodesign requirements set out in Annex II shall apply from the dates indicated therein.

### Article 4

### Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain the reason why certain, if any, plastic parts are not marked as per the exemption set out in point D(2) of Annex II, and the details and results of the calculations set out in Annex III to this Regulation.

<sup>(16)</sup> Council Directive 93/42/EEC of 14 June 1993 concerning medical devices (OJ L 169, 12.7.1993, p. 1).

<sup>(1&</sup>lt;sup>7</sup>) Regulation (EU) 2017/745 of the European Parliament and of the Council of 5 April 2017 on medical devices, amending Directive 2001/83/EC, Regulation (EC) No 178/2002 and Regulation (EC) No 1223/2009 and repealing Council Directives 90/385/EEC and 93/42/EEC (OJ L 117, 5.5.2017, p. 1).

<sup>(&</sup>lt;sup>18</sup>) Council Directive 90/385/EEC of 20 June 1990 on the approximation of the laws of the Member States relating to active implantable medical devices (OJ L 189, 20.7.1990, p. 17).

<sup>(&</sup>lt;sup>19</sup>) Directive 98/79/EC of the European Parliament and of the Council of 27 October 1998 on in vitro diagnostic medical devices (OJ L 331, 7.12.1998, p. 1).

 <sup>(2) 2007/746</sup> of the European Parliament and of the Council of 5 April 2017 on in vitro diagnostic medical devices and repealing Directive 98/79/EC and Commission Decision 2010/227/EU (OJ L 117, 5.5.2017, p. 176).

- 3. Where the information included in the technical documentation for a particular model has been obtained:
- (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer, or
- (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

4. The technical documentation shall include the information in the order and as set out in Annex VI of Regulation (EU) 2019/2013. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to Annex IV, point 2(g) of Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Regulation (EU) 2019/2013.

# Article 5

### Verification procedure for market surveillance purposes

Member State authorities shall apply the verification procedure set out in Annex IV to this Regulation when performing the market surveillance checks referred to in Article 3 point 2 of Directive 2009/125/EC.

# Article 6

# Circumvention and software updates

The manufacturer or importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle) and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level, for any of the parameters declared by the manufacturer, importer or authorised representative, in the technical documentation or included in any of the documentation provided.

The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity except with explicit consent of the end-user prior to the update. No performance change shall occur as result of rejecting the update.

A software update shall never have the effect of changing the product's performance in a way that makes it non-compliant with the ecodesign requirements applicable for the declaration of conformity.

### Article 7

# Indicative benchmarks

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

### Article 8

#### Review

The Commission shall review this Regulation in the light of technological progress and shall present the results of the assessment, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2022.

This review shall in particular assess:

- (a) the need to update the definitions or the scope of the Regulation;
- (b) the appropriateness of the balance of stringency between larger and smaller products;
- (c) the need to adapt regulatory requirements as result of new technologies available, such as HDR, 3D mode, high frame rate, resolution levels above UHD-8K;
- (d) the appropriateness of the allowances;
- (e) the appropriateness of setting on-mode energy efficiency requirements for digital signage displays or other displays not covered in this respect;
- (f) the appropriateness of setting different or additional requirements to enhance durability, to facilitate repair and reuse, including the time frame for making available spare parts, and for including a standardised external power supply;
- (g) the appropriateness of setting different or additional requirements to improve dismantling at end of life and recyclability, including in relation to critical raw materials and in relation to the conveying of information to recyclers;
- (h) resource efficiency requirements for displays integrated into products covered by Directive 2009/125/EC and into any other product belonging to the scope of Directive 2012/19/EU.

### Article 9

### Amendment to Regulation (EC) No 1275/2008

Annex I to Regulation (EC) No 1275/2008 is amended as follows:

- (a) point 2 is replaced by the following:
  - <sup>1</sup>2. Information technology equipment intended primarily for use in the domestic environment, but excluding desktop computers, integrated desktop computers and notebook computers as defined in Commission Regulation (EU) No 617/2013, as well as electronic displays covered by Regulation (EU) 2019/2021 (\*).

#### Article 10

## Repeal

Regulation (EC) No 642/2009 is repealed with effect from 1 March 2021.

<sup>(\*)</sup> Commission Regulation (EU) 2019/2021 of 1 October 2019 laying down eco-design requirements for electronic displays pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EC) 642/2009 (OJ L 315, 5.12.2019, p. 241).'

<sup>(</sup>b) in point 3, the last entry is replaced by the following:

<sup>&#</sup>x27;and other equipment for the purpose of recording or reproducing sound or images, including signals or other technologies for the distribution of sound and image other than by telecommunications, but excluding electronic displays covered by Regulation (EU) 2019/2021'.

# Article 11

# Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 6, first paragraph shall apply from 25 December 2019.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 1 October 2019.

For the Commission The President Jean-Claude JUNCKER
#### ANNEX I

### Definitions applicable for the Annexes

The following definitions shall apply:

- (1) 'on mode' or 'active mode' means a condition in which the electronic display is connected to a power source, has been activated and is providing one or more of its display functions;
- (2) 'off mode' means a condition in which the electronic display is connected to the mains power source and is not providing any function; the following shall also be considered as off mode:
  - (1) conditions providing only an indication of off mode condition;
  - (2) conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council (<sup>1</sup>);
- (3) '*standby mode*' means a condition where the electronic display is connected to a power source, depends on energy input from that source to work as intended and provides only the following functions, which may persist for an indefinite time:

- reactivation function, or reactivation function and only an indication of enabled reactivation function; and/or

— information or status display;

- (4) 'organic light emitting diode (OLED)' means a technology in which light is produced from a solid state device embodying a pn junction of organic material. A junction emits optical radiation when excited by electric current;
- (5) 'microLED display' means an electronic display where individual pixels are lit using microscopic GaN LED technology;
- (6) 'normal configuration' means a display setting which is recommended to the end-user by the manufacturer from the initial set up menu or the factory setting that the electronic display has for the intended product use. It must deliver the optimal quality for the end user in the intended environment and for the intended use. The normal configuration is the condition in which the values for off, standby, networked standby and on mode are measured;
- (7) 'External Power Supply (EPS)' means a device as defined in Commission Regulation (EU) 2019/1782 (<sup>2</sup>);
- (8) 'USB' means Universal Serial Bus;
- (9) 'Automatic Brightness Control (ABC)' means the automatic mechanism that, when enabled, controls the brightness of an electronic display as a function of the ambient light level illuminating the front of the display;
- (10) 'default', referring to a specific feature or setting, means the value of a specific feature as set at the factory and available when the customer uses the product for the first time and after performing a 'reset to factory settings' action, if allowed by the product;
- (11) 'luminance' means the photometric measure of the luminous intensity per unit area of light traveling in a given direction, expressed in units of candelas per square meter (cd/m<sup>2</sup>). The term brightness is often used to 'subjectively' qualify the luminance of a display;
- (12) 'close viewing' means a viewing distance comparable to that obtained when viewing an electronic display held in the hand or when sitting at the desk;

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

<sup>(&</sup>lt;sup>2</sup>) Commission Regulation (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 278/2009 (see page 95 of this Official Journal).

- (13) 'forced menu' means a specific menu, appearing upon initial start-up of the display or upon a reset to factory settings, offering a set of alternative display settings, pre-defined by the manufacturer;
- (14) 'network' means a communication infrastructure with a topology of links and an architecture that includes the physical components, organisational principles and communication procedures and formats (protocols);
- (15) 'network interface' or 'network port' means a wired or wireless physical interface, providing network connection, through which functions of the electronic display can be remotely activated and data received or sent. Interfaces to input data such as video and audio signals, but not originated from a network source and not using a network address, are not considered to be a network interface;
- (16) 'network availability' means the capability of an electronic display to activate functions after a remotely initiated trigger has been detected by a network interface;
- (17) 'networked display' means an electronic display that can connect to a network using one of its network interfaces, if enabled;
- (18) 'networked standby mode' means a condition in which the electronic display is able to resume a function by way of a remotely initiated trigger from a network interface;
- (19) 'reactivation function' means a function that via a remote switch, a remote control unit, an internal sensor, a timer or, for networked displays in networked standby mode, the network, provides a switch from standby mode or networked standby mode to a mode, other than off-mode, providing additional functions;
- (20) 'room presence sensor' or 'gesture detection sensor' or 'occupancy sensor' means a sensor monitoring and reacting to the movements in the space around the product whose signal can trigger the switching to on mode. Lack of movement detection for a predetermined time can be used to switch into standby mode or networked standby mode;
- (21) 'pixel (picture element)' means the area of the smallest element of a picture that can be distinguished from its neighbouring elements;
- (22) 'touch functionality' means the possibility of inputting commands using, as input device, a touch-sensitive device, that generally is in the form of a transparent film layered on top of an electronic display panel;
- (23) 'brightest on mode configuration' means the configuration of the electronic display, set by the manufacturer, which provides an acceptable picture with the highest measured peak white luminance;
- (24) 'shop configuration' means the configuration for use specifically in the context of demonstrating the electronic display, for example in high illumination (retail) conditions and not involving an auto power-off if no user action or presence is detected. This configuration may be not accessible through a displayed menu;
- (25) 'dismantling' means possibly irreversible taking apart of an assembled product into its constituent materials and/or components;
- (26) 'disassembling' means reversible taking apart of an assembled product into its constituent materials and/or components without functional damage that would preclude reassembling, reuse or refurbishment of the product;
- (27) 'step' referring to dismantling or disassembling, means an operation that finishes with a change of tool or with the removal of a component or part;
- (28) 'Printed Circuit Board' (PCB) means an assembly that mechanically supports and electrically connects electronic or electrical components using conductive tracks, pads and other features etched from one or more sheet layers of conductive metal laminated onto or between sheet layers of a non-conductive substrate;

- (30) 'flame retardant' or 'fire retardant' means a substance that markedly retards the propagation of a flame;
- (31) 'halogenated flame retardant' means a flame retardant that contains any halogen;
- (32) 'homogeneous material' means one material of uniform composition throughout or a material consisting of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding and abrasive processes;
- (33) 'product database' means a collection of data concerning products which is arranged in a systematic manner and consists of a consumer-oriented public part, where information concerning individual product parameters is accessible by electronic means, of an online portal for accessibility and of a compliance part, with clearly specified accessibility and security requirements, as laid down in Regulation (EU) 2017/1369;
- (34) '*equivalent model*' means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;
- (35) 'model identifier' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark of the same manufacturer's, importer's or authorised representative's name;
- (36) 'spare part' means a separate part that can replace a part with the same function in a product;
- (37) 'professional repairer' means an operator or undertaking which provides services of repair and professional maintenance of electronic displays.

### ANNEX II

#### **Ecodesign requirements**

### A. ENERGY EFFICIENCY REQUIREMENTS

### 1. ENERGY EFFICIENCY INDEX LIMITS FOR ON-MODE

The energy efficiency index (EEI) of an electronic display shall be calculated using the following equation:

 $EEI = \frac{(P_{measured} + 1)}{(3 \times [90 \times tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3) + 3}$ 

Where:

A represents the screen area in dm<sup>2</sup>;

P<sub>measured</sub> is the measured power in Watts in on mode in the normal configuration, in standard dynamic range (SDR);

corr is a correction factor of 10 for OLED electronic displays that do not apply the ABC allowance in point B (1). This shall apply until 28 February 2023. corr shall be zero in all other cases.

The EEI of an electronic display shall not exceed the maximum EEI ( $EEI_{max}$ ) according to the limits in Table 1 from the dates indicated.

|              | <b>EEI</b> <sub>max</sub> for electronic displays with resolution up to 2 138 400 pixels (HD) | <b>EEI</b> <sub>max</sub> for electronic displays with<br>resolution above 2 138 400 pixels<br>(HD) and up to 8 294 400<br>pixels (UHD-4k) | <b>EEI</b> <sub>max</sub> for electronic displays with resolution above 8 294 400 pixels (UHD-4k) and for MicroLED displays |
|--------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1 March 2021 | 0,90                                                                                          | 1,10                                                                                                                                       | n.a.                                                                                                                        |
| 1 March 2023 | 0,75                                                                                          | 0,90                                                                                                                                       | 0,90                                                                                                                        |

### Table 1

### EEI limits for on-mode

B. ALLOWANCES AND ADJUSTMENTS FOR THE PURPOSE OF THE EEI CALCULATION AND FUNCTIONAL REQUIREMENTS

From 1 March 2021, electronic displays shall meet the requirements listed below.

### 1. Electronic displays with automatic brightness control (ABC)

Electronic displays qualify for a 10 % reduction in  $P_{measured}$ , if they meet all of the following requirements:

(a) ABC is enabled in the normal configuration of the electronic display and persists in any other standard dynamic range configuration available to the end-user;

- (b) the value of  $P_{measured}$ , in the normal configuration, is measured with ABC disabled or, if ABC cannot be disabled, in an ambient light condition of 100 lux measured at the ABC sensor;
- (c) the value of  $P_{measured}$  with ABC disabled, if applicable, shall be equal to or greater than the on mode power measured with ABC enabled in an ambient light condition of 100 lux measured at the ABC sensor;
- (d) with ABC enabled, the measured value of the on mode power must decrease by 20% or more when the ambient light condition, measured at the ABC sensor, is reduced from 100 lux to 12 lux; and
- (e) the ABC control of the display screen luminance meets all of the following characteristics when the ambient light condition measured at the ABC sensor changes:
  - the measured screen luminance at 60 lux is between 65% and 95% of the screen luminance measured at 100 lux;
  - the measured screen luminance at 35 lux is between 50 % and 80 % of the screen luminance measured at 100 lux; and
  - the measured screen luminance at 12 lux is between 35 % and 70 % of the screen luminance measured at 100 lux.

### 2. Forced menu and set up menus

Electronic displays may be placed on the market with a forced menu on initial activation proposing alternative settings. Where a forced menu is provided, the normal configuration shall be set as default choice, otherwise the normal configuration shall be the out-of-the-box setting.

If the user selects a configuration other than the normal configuration and this configuration results in a higher power demand than the normal configuration, a warning message about the likely increase in energy use shall appear and confirmation of the action shall be explicitly requested.

If the user selects a setting other than those that are part of the normal configuration and this setting results in a higher energy consumption than the normal configuration, a warning message about the likely increase in energy consumption shall appear and confirmation of the action explicitly requested.

A change by the user in a single parameter in any setting shall not trigger any change in any other energy-relevant parameter, unless unavoidable. In such a case a warning message shall appear about the change of other parameters and the confirmation of the change shall be explicitly requested.

### 3. Peak white luminance ratio

In the normal configuration, the peak white luminance of the electronic display in a 100 lux ambient light viewing environment shall not be less than 220  $cd/m^2$  or, if the electronic display is primarily intended for close viewing by a single user, not less than 150  $cd/m^2$ .

If the electronic display's peak white luminance in the normal configuration is set to lower values, it shall not be less than 65 % of the peak white luminance of the display, in a 100 lux ambient light viewing environment in the brightest on mode configuration.

### C. OFF MODE, STANDBY AND NETWORKED STANDBY MODE REQUIREMENTS

From 1 March 2021, electronic displays shall meet the requirements listed below.

Table 2

### 1. Power demand limits other than on-mode

Electronic displays shall not exceed power demand limits in the different modes and conditions listed in Table 2:

| power demand limits other than on-mode, in Watts                                  |          |              |                           |  |
|-----------------------------------------------------------------------------------|----------|--------------|---------------------------|--|
|                                                                                   | Off mode | Standby mode | Networked standby<br>mode |  |
| Maximum limits                                                                    | 0,30     | 0,50         | 2,00                      |  |
| Allowances for additional functions when present and enabled                      |          |              |                           |  |
| Status display                                                                    | 0,0      | 0,20         | 0,20                      |  |
| Deactivation using room presence detection                                        | 0,0      | 0,50         | 0,50                      |  |
| Touch functionality, if usable for activation                                     | 0,0      | 1,00         | 1,00                      |  |
| HiNA function                                                                     | 0,0      | 0,0          | 4,00                      |  |
| Total maximum power demand with all additional functions when present and enabled | 0,30     | 2,20         | 7,70                      |  |

# 2. Availability of off, standby and networked standby modes

Electronic displays shall provide off mode or standby mode or a networked standby mode or other modes which do not exceed the applicable power demand requirements for standby mode.

The configuration menu, instruction manuals and other documentation, if any, shall refer to off mode, standby mode or networked standby mode using those terms.

Automatic switch to off mode and/or standby mode and/or another mode which does not exceed the applicable power demand requirements for standby mode shall be set as default, including for networked displays where the network interface is enabled when in on mode.

Networked standby mode shall be disabled in 'normal configuration' of a networked television. The end user shall be prompted to confirm the activation of networked standby, if it is needed for a chosen remotely activated function, and must be able to disable it.

Networked electronic displays shall comply with the requirements for standby mode when networked standby mode is disabled.

### 3. Automatic standby in televisions

(a) Televisions shall provide a power management function, enabled as delivered by the manufacturer that, within 4 hours following the last user interaction, shall switch the television from on mode into standby mode or networked standby mode or another mode which does not exceed the applicable power demand requirements respectively for standby or networked standby mode. Before such automatic switch, televisions shall show, for at least 20 seconds, an alert message warning the user of the impending switch, with possibility of delaying or temporarily cancelling it. EN

- (b) If the television provides a function allowing the user to shorten, extend or disable the 4-hour period for automatic mode transitions detailed in (a), a warning message shall appear about a potential increase in energy use and a confirmation of the new setting must be requested when an extension beyond the 4-hour period or disabling is selected.
- (c) If the television is equipped with a room presence sensor, the automatic transition from on mode into any mode as detailed in (a) applies if no presence is detected for no more than 1 hour.
- (d) Televisions with various selectable input sources shall prioritise the power management protocols of the signal source selected and displayed over those default power management mechanisms described in the paragraphs (a) to (c) above.

### 4. Automatic standby in displays other than televisions

Electronic displays other than televisions, with various selectable input sources shall switch, as configured in the normal configuration, into standby mode, networked standby mode or another mode which does not exceed the applicable power demand requirements respectively for standby or networked standby mode when no input is detected by any input source for over 10 seconds and, for digital interactive whiteboards and for broadcast displays, for over 60 minutes.

Before triggering such a switch, a warning message shall be displayed and the switch completed within 10 minutes.

### D. MATERIAL EFFICIENCY REQUIREMENTS

From 1 March 2021, electronic displays shall meet the requirements indicated below.

### 1. Design for dismantling, recycling and recovery

Manufacturers, importers or their authorised representatives shall ensure that joining, fastening or sealing techniques do not prevent the removal, using commonly available tools, of the components indicated in point 1 of Annex VII of Directive 2012/19/EU on WEEE or in Article 11 of Directive 2006/66/EC of the European Parliament and of the Council (<sup>1</sup>) on batteries and accumulators and waste batteries and accumulators, when present.

Manufacturers, importers or their authorised representatives shall, without prejudice to point 1 of Article 15 of Directive 2012/19/EU, make available, on a free-access website, the dismantling information needed to access any of the products components referred to in point 1 of Annex VII of Directive 2012/19/EU.

This dismantling information shall include the sequence of dismantling steps, tools or technologies needed to access the targeted components.

The end of life information shall be available until at least 15 years after the placing on the market of the last unit of a product model.

#### 2. Marking of plastic components

Plastic components heavier than 50 g:

(a) Shall be marked by specifying the type of polymer with the appropriate standard symbols or abbreviated terms set between the punctuation marks '>' and '<' as specified in available standards. The marking shall be legible.

Plastic components are exempt from marking requirements in the following circumstances:

- (i) the marking is not possible because of the shape or size;
- (ii) the marking would impact on the performance or functionality of the plastic component; and
- (iii) marking is technically not possible because of the molding method.

<sup>(1)</sup> Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC (OJ L 266, 26.9.2006, p. 1).

For the following plastic components no marking is required:

- (i) packaging, tape, labels and stretch wraps;
- (ii) wiring, cables and connectors, rubber parts and anywhere not enough appropriate surface area is available for the marking to be of a legible size;
- (iii) PCB assemblies, PMMA boards, optical components, electrostatic discharge components, electromagnetic interference components, speakers;
- (iv) transparent parts where the marking would obstruct the function of the part in question.
- (b) Components containing flame retardants shall additionally be marked with the abbreviated term of the polymer followed by hyphen, then the symbol 'FR' followed by the code number of the flame retardant in parentheses. The marking on the enclosure and stand components shall be clearly visible and readable.

#### 3. Cadmium logo

Electronic displays with a screen panel in which concentration values of Cadmium (Cd) by weight in homogeneous materials exceed 0,01 % as defined in Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment, shall be labelled with the 'Cadmium inside' logo. The logo shall be clearly visible durable, legible and indelible. The logo shall be in the form of the following graphic:



The dimension of 'a' shall be greater than 9 mm and the typeface to be used is 'Gill Sans'.

An additional 'Cadmium inside' logo shall be firmly attached internally on the display panel or molded in a position clearly visible to workers once the external back cover bearing the external logo is removed.

A 'Cadmium free' logo shall be used if concentration values of Cadmium (Cd) by weight in any homogeneous material part of the display do not exceed 0,01 % as defined in Directive 2011/65/EU.

### 4. Halogenated flame retardants

The use of halogenated flame retardants is not allowed in the enclosure and stand of electronic displays.

### 5. Design for repair and reuse

- (a) Availability of spare parts:
  - manufacturers, importers or authorised representatives of electronic displays shall make available to professional repairers at least the following spare parts: internal power supply, connectors to connect external equipment (cable, antenna, USB, DVD and Blue-Ray), capacitors, batteries and accumulators, DVD/Blue-Ray module if applicable and HD/SSD module if applicable for a minimum period of seven years after placing the last unit of the model on the market;

- (2) manufacturers, importers or authorised representatives of electronic displays shall make available to professional repairers and end-users at least the following spare parts: external power supply and remote control for a minimum period of seven years after placing the last unit of the model on the market;
- (3) manufacturers shall ensure that these spare parts can be replaced with the use of commonly available tools and without permanent damage to the appliance;
- (4) the list of spare parts concerned by point 1 and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts; and
- (5) the list of spare parts concerned by point 2 and the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.
- (b) Access to repair and maintenance information

After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, and until the end of the period mentioned under (a), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:

- (1) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers, importers or authorised representative may require the professional repairer to demonstrate that:
  - (i) the professional repairer has the technical competence to repair electronic displays and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
  - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity, regardless of whether this is required by the Member State;
- (2) the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request by the professional repairer;
- (3) manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information.

Once registered, a professional repairer shall have access to the requested repair and maintenance information within one working day after requesting it. The available repair and maintenance information shall include:

- the unequivocal appliance identification;
- a disassembly map or exploded view;
- list of necessary repair and test equipment;
- component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- wiring and connection diagrams;
- diagnostic fault and error codes (including manufacturer-specific codes, where applicable); and
- data records of reported failure incidents stored on the electronic display (where applicable).

- (c) Maximum delivery time of spare parts
  - (1) during the period mentioned under point 5(a)(1) and point 5(a)(2), the manufacturer, importer or authorised representatives shall ensure the delivery of the spare parts for electronic displays within 15 working days after having received the order;
  - (2) in the case of spare parts available only to professional repairers, this availability may be limited to professional repairers registered in accordance with point (b).

### E. INFORMATION AVAILABILITY REQUIREMENTS

From 1 March 2021, the product manufacturer, importer or authorised representative shall make available the information set out below when placing on the market the first unit of a model or of an equivalent model.

The information shall be provided free of charge to third parties dealing with professional repair and reuse of electronic displays (including third party maintenance actors, brokers and spare parts providers).

### 1. Availability of software and firmware updates

- (a) The latest available version of the firmware shall be made available for a minimum period of eight years after the placing on the market of the last unit of a certain product model, free of charge or at a fair, transparent and nondiscriminatory cost. The latest available security update to the firmware shall be made available until at least eight years after the placing on the market of the last product of a certain product model, free of charge.
- (b) Information on the minimum guaranteed availability of software and firmware updates, availability of spare parts and product support shall be indicated in the product information sheet as from Annex V of Regulation (EU) 2019/2013.

#### ANNEX III

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union* or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and in line with the following provisions.

Measurements and calculations shall meet the technical definitions, conditions, equations and parameters set out in this Annex. Electronic displays which can operate in both 2D and 3D modes shall be tested when they operate in 2D mode.

An electronic display which is split into two or more physically separate units, but placed on the market in a single package, shall, for checking the conformity with the requirements of this Annex, be treated as a single electronic display. Where multiple electronic displays that can be placed on the market separately are combined in a single system, the individual electronic displays shall be treated as single displays.

### 1. General conditions

Measurements shall be made at an ambient temperature of 23 °C +/- 5 °C.

#### 2. Measurements of on mode power demand

Measurements of the power demand referred to in Annex II, point A (1) shall fulfil all of the following conditions:

- (a) measurements of power demand (P<sub>measured</sub>) shall be made in the normal configuration;
- (b) measurements shall be made using a dynamic broadcast-content video signal representing typical broadcast content for electronic displays in standard dynamic range (SDR). The measurement shall be the average power consumed over 10 consecutive minutes;
- (c) measurements shall be made after the electronic display has been in the off mode or, if an off-mode is not available, in standby mode, for a minimum of 1 hour immediately followed by a minimum of 1 hour in the on mode and shall be completed before a maximum of 3 hours in on-mode. The relevant video signal shall be displayed during the entire on mode duration. For electronic displays that are known to stabilise within 1 hour, these durations may be reduced if the resulting measurement can be shown to be within 2% of the results that would otherwise be achieved using the durations described here;
- (d) where ABC is available, measurements shall be made with it switched off. If ABC cannot be switched off, then the measurements shall be performed in an ambient light condition of 100 lux measured at the ABC sensor.

### Measurements of peak white luminance

Measurements of the peak white luminance referred to in Annex II, point B.3 shall be made:

- (a) with a luminance meter, detecting that portion of the screen exhibiting a full (100 %) white image, which is part of a 'full screen test' pattern that does not exceed the average picture level (APL) point where any power limiting or other irregularity occurs in the electronic display luminance drive system affecting the electronic display luminance;
- (b) without disturbing the luminance meter's detection point on the electronic display whilst switching between any of the conditions referred to in Annex II, point B.3.

#### ANNEX IV

#### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by Member State authorities and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the procedure indicated below for the requirements referred to in Annex II.

#### 1. General procedure

The Member States authorities shall verify one single unit of the model.

The model shall be considered to comply with the applicable requirements if:

- (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values) and, where applicable, the values used to calculate these values are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof;
- (b) the declared values meet any requirements laid down in this Regulation and any product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values;
- (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 3; and
- (d) when the Member State authorities check the unit of the model, it complies with the functional requirements and the requirements on repair and end-of-life aspects.

#### 1.1. Verification procedure for requirements established in Annex II, point B.1

The model shall be considered to comply with the applicable requirements if:

- (a) the ABC of the product is enabled by default and persists in all SDR modes, except in the shop configuration;
- (b) the measured on mode power of the product decreases by 20 % or more when the ambient light condition measured at the ABC sensor is reduced from 100 lux to 12 lux;
- (c) the ABC control of display luminance meets the requirements of Annex II, point B.1(e).

#### 1.2. Verification procedure for requirements established in Annex II, point B.2

The model shall be considered to comply with the applicable requirements if:

- (a) the normal configuration is provided as the default choice on initial activation of the electronic display; and
- (b) if the user selects a mode other than normal configuration, a second selection process is prompted to confirm the choice.

### 1.3. Verification procedure for requirements established in Annex II, point B.3

The model shall be considered to comply with the applicable requirements if the determined value of the peak white luminance or, if applicable, the peak white luminance ratio, meets the value required in point B.3.

### 1.4. Verification procedure for requirements established in Annex II, point C.1

The model shall be considered to comply with the applicable requirements if, when connected to the power source:

- (a) the off mode and/or standby mode and/or another mode which does not exceed the applicable power demand requirements for off mode and/or standby mode, is set as default;
- (b) if the unit provides networked standby mode with HiNA, the unit does not exceed the applicable power demand requirements for HiNA when networked standby is enabled; and
- (c) if the unit provides networked standby mode without HiNA, the unit does not exceed the applicable power demand requirements without HiNA when networked standby is enabled.

### 1.5. Verification procedure for requirements established in Annex II, point C.2

The model shall be considered to comply with the applicable requirements if:

- (a) the unit provides off mode and/or standby mode, and/or another mode which does not exceed the applicable power demand requirements for off mode and/or standby mode, when the electronic display is connected to the power source; and
- (b) the activation of the network availability requires the end-user's intervention; and
- (c) the network availability can be disabled by the end-user; and
- (d) it complies with the requirements for standby mode when networked standby mode is not enabled.

### 1.6. Verification procedure for requirements established in Annex II, point C.3

The model shall be considered to comply with the applicable requirements if:

- (a) within 4 hours in on mode following the last user interaction or within 1 hour if a room presence sensor is enabled and no movement is detected, the television automatically switches from on mode to standby mode or off mode or networked standby mode, if enabled, or another mode which does not exceed the applicable power demand requirements for standby mode. Member State authorities shall use the applicable procedure to measure the power demand after the automatic power down functionality switches the television into the applicable power mode; and
- (b) the function is set as default; and
- (c) in on mode, the television shows an alert message before automatically switching from on mode to the applicable mode; and
- (d) if the television provides a function allowing the user to modify the 4-hour period for automatic mode transitions detailed in (a), a warning message is prompted about a potential increase in energy use and a confirmation of the new setting is requested when an extension beyond the 4-hour period or disabling is selected; and
- (e) if the television is equipped with a room presence sensor, the automatic transition from on mode into any mode as detailed in (a) applies if no presence is detected for no more than 1 hour; and
- (f) in televisions with various selectable input sources the power management protocols of the signal source selected is prioritised over those default power management mechanisms described in (a) above.

### 1.7. Verification procedure for requirements established in Annex II, point C.4

The model shall be tested for each end user selectable signal input interface type which has specified that it can carry power management control signals or data. Where there are two or more identical signal interfaces not labelled for a specific host product type (e.g. HDMI-1, HDMI-2, etc.) it is sufficient to test one of these signal interfaces selected at random. Where there are labelled or menu designated signal interfaces (e.g. computer, set top box or analogous) the appropriate host signal source device should be connected to the designated signal interface for the test. The model shall be considered to comply with the applicable requirement if no signal by any input source is detected and the model switches into standby mode, off mode or networked standby mode.

### 1.8. Verification procedure for requirements established in Annex II, point D and E

The model shall be considered to comply with the applicable requirements if, when the Member State authorities check the unit of the model, it complies with the requirements on resource efficiency in Annex II, points D and E.

### 2. Procedure if requirements are not achieved

If the results referred to in point 1(c) and 1(d) related to requirements not involving measured values are not achieved, the model and all equivalent models shall be considered not to comply.

If the results referred to in point 1(c) and 1(d) related to requirements involving measured values are not achieved, the Member State authorities shall select three additional units of the same model or equivalent models for testing. The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 3. Otherwise the model and all equivalent models shall be considered not to comply.

The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after the decision is taken on the non-compliance of the model.

The Member State authorities shall use the measurement and calculation methods set out in Annex III and only use the procedure described in points 1 and 2 for the requirements referred to in this Annex.

### 3. Verification tolerances

The Member State authorities shall only apply the verification tolerances that are set out in Table 3. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

The verification tolerances defined in this Annex relate only to the verification of the measured parameters by the Member State authorities and shall not be used by the manufacturer as an allowed tolerance on the values in the technical documentation to achieve compliance with the requirements. Declared values shall not be more favourable for the manufacturer than the values reported in the technical documentation.

| Parameter                                                                                                                                                                    | Verification tolerances                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On mode power demand, ( $P_{measured}$ , Watts) excluding allowances and adjustments in Annex II, point B, for the purposes of EEI calculation set out in Annex II, point A. | The determined value (*) shall not exceed the declared value by more than 7 %                                                                                                               |
| Off mode, standby mode and networked standby mode<br>power demand (Watts), as applicable                                                                                     | The determined value (*) shall not exceed the declared value by more than 0,10 Watt if the declared value is 1,00 W or less, or by more than 10 % if the declared value is more than 1,00 W |
| Peak white luminance ratio                                                                                                                                                   | Where applicable, the determined value shall not be lower<br>than 60 % of the peak white luminance of the brightest on<br>mode configuration provided by the electronic display             |

#### Table 3

### Verification tolerances

| Parameter                                                        | Verification tolerances                                                                                |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Peak white luminance (cd/m <sup>2</sup> )                        | The determined value (*) shall not be lower than the declared value by more than 8 %                   |
| Visible screen diagonal in centimetres (and inches, if declared) | The determined value (*) shall not be lower than the declared value by more than 1 cm (or 0,4 inches). |
| Screen area in dm <sup>2</sup>                                   | The determined value (*) shall not be lower than the declared value by more than 0,1 dm <sup>2</sup>   |
| Timed functions as set out in Annex II, points C.3 and C.4       | The switch shall be completed within 5 seconds of the set out values                                   |
| Weight of plastic components as qualified in Annex II, point D.2 | The determined value (*) shall not be different from the declared value by more than 5 grams           |

(\*) In the case of three additional units tested as prescribed in Annex IV point 2(a), the determined value means the arithmetic mean of the values determined for these three additional units.

### ANNEX V

### Benchmarks

The best available technology on the market, at the time of entry into force of this Regulation, for the environmental aspects that were considered significant and are quantifiable is indicated below.

The following indicative benchmarks are identified for the purpose of part 3, point 2 of Annex I to Directive 2009/125/EC. They refer to the best available technology at the time of drafting this Regulation for electronic displays on the market.

| Diagonal of screen area        |          | HD   | UHD   |
|--------------------------------|----------|------|-------|
| (cm)                           | (inches) | Watt | Watt  |
| 55,9                           | 22       | 15   |       |
| 81,3                           | 32       | 25   |       |
| 108,0                          | 43       | 33   | 47    |
| 123,2                          | 49       | 43   | 57    |
| 152,4                          | 60       | 62   | 67    |
| 165,1                          | 65       | 56   | 71    |
| Other functioning modes:       |          |      |       |
| Off mode (physical switch):    |          |      | 0,0 W |
| Off mode (no physical switch): |          |      | 0,1 W |
| Standby                        |          |      | 0,2 W |
| Networked standby (non-HiNA):  |          |      | 0,9 W |

### COMMISSION REGULATION (EU) 2019/2022

#### of 1 October 2019

laying down ecodesign requirements for household dishwashers pursuant to Directive 2009/125/EC of the European Parliament and of the Council amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EU) No 1016/2010

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (<sup>1</sup>), and in particular Article 15(1) thereof,

Whereas:

- (1) Pursuant to Directive 2009/125/EC, the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) The Communication from the Commission COM(2016) 773 (<sup>2</sup>) (ecodesign working plan) established by the Commission in application of Article 16(1) of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The ecodesign working plan identifies the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Commission Regulation (EU) No 1016/2010 (<sup>3</sup>) and Commission Delegated Regulation (EU) No 1059/2010 (<sup>4</sup>).
- (3) Measures from the ecodesign working plan have an estimated potential to deliver a total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Household dishwashers is one of the product groups listed in the working plan, with estimated annual electricity savings of 2,1 TWh, leading to GHG emission reductions of 0,7 Mt CO<sub>2</sub> eq/year, and estimated water savings of 16 million m<sup>3</sup> in 2030.
- (4) The Commission established ecodesign requirements for household dishwashers by Regulation (EU) No 1016/2010 and pursuant to that Regulation, the Commission should review it in light of technological progress.
- (5) The Commission has reviewed Regulation (EU) No 1016/2010 and analysed the technical, environmental and economic aspects of household dishwashers as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- (6) It appears from the review study that there is a need to revise the ecodesign requirements for household dishwashers, the requirements related to use of essential resources such as energy and water and also to introduce requirements related to resource efficiency such as reparability and recyclability.
- (7) The environmental aspects of household dishwashers, which have been identified as significant for the purposes of this Regulation, are the consumption of energy and water during the use phase, the generation of waste at the end of life and the emissions to air and water in the production phase (due to the extraction and processing of raw materials) and in the use phase (because of the consumption of electricity).

<sup>(&</sup>lt;sup>1</sup>) OJ L 285, 31.10.2009, p. 10.

<sup>(</sup>²) Communication from the Commission. Ecodesign working plan 2016-2019, COM(2016) 773 final, 30.11.2016.

<sup>(3)</sup> Commission Regulation (EU) No 1016/2010 of 10 November 2010 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household dishwashers (OJ L 293, 11.11.2010, p. 31).

<sup>(4)</sup> Commission Delegated Regulation (EU) No 1059/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of household dishwashers (OJ L 314, 30.11.2010, p. 1).

- (8) The annual energy consumption of products subject to this Regulation in the Union was estimated at 31,3 TWh in the Union in 2015, corresponding to 11,1 million tonnes of  $CO_2$  equivalent. The projected energy consumption of household dishwashers in a business as usual scenario is expected to increase to 49,0 TWh in 2030, mainly because of the increase in the total number of dishwashers in use. That increase in energy consumption may however be limited if the existing ecodesign requirements are updated. Similarly, the water consumption of household dishwashers was estimated at 318 million m<sup>3</sup> in 2015 and is expected to increase up to 531 million m<sup>3</sup> in 2030 in the absence of updated requirements. Finally, the service lifetime of household dishwashers has been estimated to have decreased in recent years to around 12,5 years and the trend is likely to continue in the absence of incentives.
- (9) The Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2015) 614 final (<sup>5</sup>) (circular economy action plan) and the Communication on the ecodesign working plan (<sup>6</sup>) underline the importance of using the ecodesign framework in order to support the move towards more resource efficient and circular economy. Directive 2012/19/EU of the European Parliament and of the Council (<sup>7</sup>) refers to Directive 2009/125/EC and indicates that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste electrical and electronic equipment (WEEE) by tackling the issues upstream. Therefore this Regulation should lay down appropriate requirements contributing to circular economy objectives.
- (10) Non-household dishwashers have distinct characteristics and uses. They are subject to other regulatory work, in particular Directive 2006/42/EC of the European Parliament and of the Council (8) on machinery, and should not be included in the scope of this Regulation. Provisions for household dishwashers should apply to dishwashers with the same technical characteristics, regardless of the setting they are used in. All household dishwashers should meet minimum requirements on cleaning and drying, irrespective of the methods used.
- (11) Specific requirements for the low power modes of household dishwashers should be laid down. The requirements of Commission Regulation (EC) No 1275/2008 (%) should not apply to household dishwashers covered by the scope of this Regulation. Regulation (EC) No 1275/2008 should be amended accordingly.
- (12) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation organisations, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>10</sup>).
- (13) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (14) To facilitate compliance checks, manufacturers, importers or authorised representatives should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation.
- (15) Where parameters of the technical documentation, as defined by this Regulation, are identical to parameters of the product information sheet defined by Commission Delegated Regulation (EU) 2019/2017 (<sup>11</sup>), manufacturers, importers or authorised representatives should enter the corresponding data into the product database defined by Regulation (EU) 2017/1369 of the European Parliament and of the Council (<sup>12</sup>) and should no longer need to provide them to market surveillance authorities as part of the technical documentation.

<sup>(&</sup>lt;sup>5</sup>) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Closing the loop — An EU action plan for the circular economy (COM(2015) 614 final of 2.12.2015).

<sup>(6)</sup> COM(2016) 773 final of 30.11.2016

<sup>(7)</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38).

<sup>(\*)</sup> Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (OJ L 157, 9.6.2006, p. 24).

<sup>(&</sup>lt;sup>9</sup>) Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p. 45)

<sup>(&</sup>lt;sup>10</sup>) Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(&</sup>lt;sup>11</sup>) Commission Delegated Regulation (EU) 2019/2017 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of household dishwashers and repealing Commission Delegated Regulation (EU) No 1059/2010 (See page 134 of this Official Journal).

<sup>(&</sup>lt;sup>12</sup>) Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1)

- (16) To ensure the effectiveness and credibility of the Regulation and to protect consumers, products that automatically alter their performance in test conditions to improve the declared parameters should not be allowed to be placed on the market.
- (17) In addition to the requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on the life-cycle environmental performance of products subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, Annex I, part 3, point (2).
- (18) This Regulation should be reviewed in order to assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should be sufficient for all provisions to be implemented and show an effect on the market.
- (19) Regulation (EU) No 1016/2010 should be repealed.
- (20) In order to facilitate the transition between Regulation (EU) No 1016/2010 and this Regulation, the name 'eco' should be allowed to be used instead of 'standard programme' as from the entry into force of this Regulation.
- (21) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19(1) of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

### Article 1

#### Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market or the putting into service of electric mains-operated household dishwashers, including built-in household dishwashers and electric mains-operated household dishwashers that can also be powered by batteries.

- 2. This Regulation shall not apply to:
- (a) dishwashers in the scope of Directive 2006/42/EC;
- (b) battery-operated household dishwashers that can be connected to the mains through an AC/DC converter purchased separately.

### Article 2

### Definitions

For the purposes of this Regulation the following definitions shall apply:

- (1) 'mains' or 'electric mains' means the electricity supply from the grid of 230 (± 10 %) volts of alternating current at 50 Hz;
- (2) 'household dishwasher' means a machine which cleans and rinses tableware, and which is declared by the manufacturer in the Declaration of Conformity to comply with Directive 2014/35/EU of the European Parliament and of the Council (<sup>13</sup>) or with Directive 2014/53/EU of the European Parliament and of the Council (<sup>14</sup>);
- (3) 'built-in household dishwasher' means a household dishwasher that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top, bottom and sides) by panels;
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;

<sup>(&</sup>lt;sup>13</sup>) Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (OJ L 96, 29.3.2014, p. 357).

<sup>(&</sup>lt;sup>14</sup>) Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (OJ L 153, 22.5.2014, p. 62).

- (4) 'equivalent model' means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;
- (5) 'model identifier' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer's, importer's or authorised representative's name;
- (6) 'product database' means a collection of data concerning products, which is arranged in a systematic manner and consists of a consumer-oriented public part, where information concerning individual product parameters is accessible by electronic means, an online portal for accessibility and a compliance part, with clearly specified accessibility and security requirements, as laid down in Regulation (EU) 2017/1369;
- (7) 'programme' means a series of operations that are pre-defined and are declared by the manufacturer, importer or authorised representative as suitable for specified levels of soil or types of load, or both;
- (8) 'eco' means the name of the programme of a household dishwasher declared by the manufacturer, importer or authorised representative as suitable to clean normally soiled tableware, and to which the ecodesign requirements on energy efficiency, cleaning and drying performance relate.

For the purposes of the annexes, additional definitions are set out in Annex I.

#### Article 3

#### **Ecodesign requirements**

The ecodesign requirements set out in Annex II shall apply from the dates indicated therein.

### Article 4

### Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of the conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain the declared values of parameters listed in Annex II, points 2, 3 and 4, and the details and the results of the calculations undertaken in accordance with Annex III.

- 3. Where the information included in the technical documentation for a particular model has been obtained:
- (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer; or
- (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both;

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

4. The technical documentation shall include the information in the order and as set out in Annex VI of Regulation (EU) 2019/2017. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to Annex IV, point 2(g) of Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Regulation (EU) 2019/2017.

### Article 5

### Verification procedure for market surveillance purposes

Member States' authorities shall apply the verification procedure set out in Annex IV when performing the market surveillance checks referred to in Article 3, point 2 of Directive 2009/125/EC.

### Article 6

#### Circumvention

The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any documentation provided.

The consumption of energy and water of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update. No performance change shall occur as a result of rejecting the update.

### Article 7

### Indicative benchmarks

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

#### Article 8

### Review

The Commission shall review this Regulation in the light of technological progress and shall present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum by 25 December 2025.

The review shall in particular focus on the following:

- (a) the improvement potential with regard to energy and environmental performance of household dishwashers, taking into account, inter alia, drying performance;
- (b) the level of verification tolerances;
- (c) an assessment of the evolution of consumer behaviour and of the penetration rate of household dishwashers in EU Member States;
- (d) the effectiveness of existing requirements on resource efficiency;
- (e) the appropriateness of setting additional resource efficiency requirements for products in accordance with the objectives of the circular economy, including whether more spare parts should be included.

### Article 9

### Amendment to Regulation (EC) No 1275/2008

In point 1 of Annex I to Regulation (EC) No 1275/2008, the entry 'Dish washing machines' is deleted.

#### Article 10

### Repeal

Regulation (EU) No 1016/2010 is repealed as of 1 March 2021.

### Article 11

#### Transitional measures

As from 25 December 2019 until 28 February 2021, by way of derogation to the requirement in Annex I, Point 1(1) of Regulation (EU) No 1016/2010, the name 'eco' may be used for the standard programme, in accordance with Point 1 of Annex II of this Regulation, instead of the name 'standard programme'.

### Article 12

### Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 6, first paragraph, and Article 11 shall apply from 25 December 2019.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 1 October 2019.

For the Commission The President Jean-Claude JUNCKER

#### ANNEX I

#### Definitions applicable for the annexes

The following definitions shall apply:

- (1) 'Energy Efficiency Index' (EEI) means the ratio of the eco programme energy consumption to the standard programme energy consumption;
- (2) 'eco programme energy consumption' (EPEC) means the energy consumption of a household dishwasher for the eco programme, expressed in kilowatt hour per cycle;
- (3) 'standard programme energy consumption' (SPEC) means the energy consumption taken as a reference as a function of the rated capacity, expressed in kilowatt hour per cycle;
- (4) 'place setting' (ps) means a set of tableware for use by one person, not including serving pieces;
- (5) 'serving pieces' means items for the preparation and serving of food which can include pots, serving bowls, serving cutlery and a platter;
- (6) 'rated capacity' means the maximum number of place settings together with the serving pieces, which can be cleaned, rinsed and dried in a household dishwasher in one cycle when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;
- (7) 'cleaning performance index' (I<sub>C</sub>) means the ratio of the cleaning performance of a household dishwasher to the cleaning performance of a reference household dishwasher;
- (8) 'drying performance index' (I<sub>D</sub>) means the ratio of the drying performance of a household dishwasher to the drying performance of a reference household dishwasher;
- (9) 'programme duration' (T<sub>t</sub>) means the length of time beginning with the initiation of the programme selected, excluding any user programmed delay, until the end of the programme is indicated and the user has access to the load;
- (10) 'cycle' means a complete cleaning, rinsing and drying process, as defined by the programme selected, consisting of a series of operations until all activity ceases;
- (11) 'off mode' means a condition in which the household dishwasher is connected to the mains and is not providing any function; the following shall also be considered as off mode:
  - (a) conditions providing only an indication of off mode;
  - (b) conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council (1);
- (12) 'standby mode' means a condition where the household dishwasher is connected to the mains, and provides only the following functions, which may persist for an indefinite time:
  - (a) reactivation function, or reactivation function and a mere indication of enabled reactivation function; and/or
  - (b) reactivation function through a connection to a network; and/or
  - (c) information or status display; and/or
  - (d) detection function for emergency measures;
- (13) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (14) 'delay start' means a condition where the user has selected a specified delay to the beginning of the cycle of the selected programme;

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

- (15) 'spare part' means a separate part that can replace a part with the same or similar function in a product;
- (16) 'professional repairer' means an operator or undertaking which provides services of repair and professional maintenance of household dishwashers;
- (17) 'eco programme water consumption' (EPWC) means the water consumption of a household dishwasher for the eco programme, expressed in litres per cycle;
- (18) 'guarantee' means any undertaking by the retailer or a manufacturer to the consumer to:
  - (a) reimburse the price paid; or
  - (b) replace, repair or handle household dishwashers in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising.

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### ANNEX II

### **Ecodesign requirements**

### 1. PROGRAMME REQUIREMENTS

From 1 March 2021, household dishwashers shall provide an eco programme meeting the following requirements:

- (a) this programme shall be:
  - named 'eco' on the programme selection device of the household dishwasher, on the household dishwasher display, if any, and on the relevant network application, if any,
  - set as the default programme for household dishwashers equipped with automatic programme selection or any
    function maintaining the selection of a programme, or, if there is no automatic programme selection, available
    for direct selection without the need for any other selection such as a specific temperature or load;
- (b) the name 'eco' shall be used exclusively for this programme. The formatting of 'eco' is not restricted in terms of font, font size, case sensitivity or colour. The only other additional information which may be combined with the term 'eco' is the temperature of the eco programme;
- (c) the indications 'normal', 'daily', 'regular' and 'standard', and their translations in all EU official languages, shall not be used in programme names for the household dishwasher, neither alone nor in combination with other information.

2. ENERGY EFFICIENCY REQUIREMENTS

From 1 March 2021, household dishwashers shall meet the following requirements:

(a) the Energy Efficiency Index (EEI) shall be less than 63.

From 1 March 2024, household dishwashers shall meet the following requirement:

(b) the EEI shall be less than 56 for household dishwashers with a rated capacity equal to or more than 10 place settings.

The EEI shall be calculated in accordance with Annex III.

#### 3. FUNCTIONAL REQUIREMENTS

From 1 March 2021, household dishwashers shall meet the following requirements:

- (a) the cleaning performance index  $(I_C)$  shall be greater than 1,12;
- (b) the drying performance index  $(I_D)$  shall be greater than 1,06 for household dishwashers with a rated capacity of more than 7 place settings;
- (c) the drying performance index  $(I_D)$  shall be greater than 0,86 for household dishwashers with a rated capacity equal to or less than 7 place settings.

The I<sub>C</sub> and the I<sub>D</sub> shall be calculated in accordance with Annex III.

### 4. LOW POWER MODES

From 1 March 2021, household dishwashers shall meet the following requirements:

(a) household dishwashers shall have an off mode or a standby mode or both. The power consumption of these modes shall not exceed 0,50 W;

- (b) if the standby mode includes the display of information or status, the power consumption of this mode shall not exceed 1,00 W;
- (c) if the standby mode provides for a connection to a network and provides networked standby as defined in Commission Regulation (EU) No 801/2013 (<sup>1</sup>), the power consumption of this mode shall not exceed 2,00 W;
- (d) at the latest 15 minutes after the household dishwasher has been switched on or after the end of any programme and associated activities or after any interaction with the equipment, if no other mode, including emergency measures, is triggered, the equipment shall switch automatically to off mode or standby mode;
- (e) if the household dishwasher provides for a delay start, the power consumption in this condition, including any standby mode, shall not exceed 4,00 W. The delay start shall not be programmable by the user for more than 24 h;
- (f) any household dishwasher that can be connected to a network shall provide the possibility to activate and deactivate the network connection. The network connection shall be deactivated by default.
- 5. RESOURCE EFFICIENCY REQUIREMENTS

From 1 March 2021, household dishwashers shall meet the following requirements:

- (1) availability of spare parts:
  - (a) the manufacturers, importers or authorised representatives of household dishwashers shall make available to professional repairers at least the following spare parts, for a minimum period of seven years after placing the last unit of the model on the market:
    - motor;
    - circulation and drain pump;
    - heaters and heating elements, including heat pumps (separately or bundled);
    - piping and related equipment including all hoses, valves, filters and aquastops;
    - structural and interior parts related to door assemblies (separately or bundled);
    - printed circuit boards;
    - electronic displays;
    - pressure switches;
    - thermostats and sensors;
    - software and firmware including reset software;
  - (b) the manufacturers, importers or authorised representatives of household dishwashers shall make available to professional repairers and end-users at least the following spare parts: door hinge and seals, other seals, spray arms, drain filters, interior racks and plastic peripherals such as baskets and lids, for a minimum period of 10 years after placing the last unit of the model on the market;
  - (c) the manufacturers, importers or authorised representatives of household dishwashers shall ensure that the spare parts mentioned in points (a) and (b) can be replaced with the use of commonly available tools and without permanent damage to the appliance;

<sup>(&</sup>lt;sup>1</sup>) Commission Regulation (EU) No 801/2013 of 22 August 2013 amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions (OJ L 225, 23.8.2013, p. 1).

- (d) the list of spare parts concerned by point (a) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts;
- (e) the list of spare parts concerned by point (b) and the procedure for ordering them and the repair instructions shall be publicly available on the free access website of the manufacturer, importer or authorised representative, when placing the first unit of a model on the market and until the end of the period of availability of these spare parts;
- (2) maximum delivery time of spare parts:
  - (a) during the period mentioned under point (1), the manufacturer, importer or authorised representative shall ensure the delivery of the spare parts within 15 working days after having received the order;
  - (b) in the case of spare parts concerned by point (1)(a), the availability of spare parts may be limited to professional repairers registered in accordance with point (3)(a) and (b);
- (3) access to Repair and Maintenance Information:

after a period of two years after the placing on the market of the first unit of a model, and until the end of the period mentioned under (1), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:

- (a) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, the manufacturers, importers or authorised representatives may require the professional repairer to demonstrate that:
  - (i) the professional repairer has the technical competence to repair household dishwashers and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
  - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity regardless of whether this is required by the Member State;
- (b) the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of the request;
- (c) the manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information;

once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The information may be provided for an equivalent model or model of the same family, if relevant;

the available repair and maintenance information shall include:

- the unequivocal appliance identification;
- a disassembly map or exploded view;
- list of necessary repair and test equipment;
- component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- wiring and connection diagrams;
- diagnostic fault and error codes (including manufacturer-specific codes, where applicable);

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- instructions for installation of relevant software and firmware including reset software; and
- information on how to access data records of reported failure incidents stored on the household dishwasher (where applicable);
- (4) information requirements for refrigerant gases:

without prejudice to Regulation (EU) No 517/2014 of the European Parliament and of the Council (<sup>2</sup>), for household dishwashers equipped with a heat pump, the chemical name of the refrigerant gas used, or equivalent reference such as a commonly used and understood symbol, label or logo, shall be displayed permanently and in a visible and readable way on the exterior of the appliance, for example on the back panel. More than one reference can be used for the same chemical name;

- (5) requirements for dismantling for material recovery and recycling while avoiding pollution:
  - manufacturers, importers or authorised representatives shall ensure that household dishwashers are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed with the use of commonly available tools,
  - manufacturers, importers or authorised representatives shall fulfil the obligations laid down in Article 15, Point 1 of Directive 2012/19/EU.

#### 6. INFORMATION REQUIREMENTS

User and installer instructions shall be provided in the form of a user manual on a free access website of the manufacturer, importer or authorised representative, and shall include:

- information that the eco programme is suitable to clean normally soiled tableware, that for this use, it is the most efficient programme in terms of its combined energy and water consumption, and that it is used to assess compliance with the EU ecodesign legislation;
- (2) information that loading the household dishwasher up to the capacity indicated by the manufacturer will contribute to energy and water savings and information on correct loading of tableware and main consequences of incorrect loading;
- (3) information that manual pre-rinsing of tableware items leads to increased water and energy consumption and is not recommended;
- (4) information that washing tableware in a household dishwasher usually consumes less energy and water in the use phase than hand dishwashing when the household dishwasher is used according to the manufacturer's instructions;
- (5) values on the programme duration, energy and water consumption for all programmes that offer a cycle;
- (6) information that the values given for programmes other than the eco programme are indicative only; and,
- (7) instruction on how to find the model information stored in the product database, as set out in Regulation (EU) 2019/2017 by means of a weblink that links to the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.

The user instructions shall also include instructions for the user to perform maintenance operations. Such instructions shall as a minimum include instructions for:

- (8) correct installation (including level positioning, connection to mains, connection to water inlets, cold and/or hot if appropriate);
- (9) correct use of detergent, salt and other additives, and main consequences of incorrect dosage;
- (10) foreign object removal from the household dishwasher;

<sup>(&</sup>lt;sup>2</sup>) Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006 (OJ L 150, 20.5.2014, p. 195).

- (11) periodic cleaning, including optimal frequency and limescale prevention, and procedure;
- (12) periodic checks of filters, including optimal frequency, and procedure;
- (13) identification of errors, the meaning of the errors, and the action required, including identification of errors requiring professional assistance;
- (14) how to access professional repair (internet webpages, addresses, contact details).

Such instructions shall also include information on:

- (15) any implications of self-repair or non-professional repair for the safety of the end-user and for the guarantee;
- (16) the minimum period during which spare parts for the household dishwasher are available.

#### ANNEX III

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and in line with the following provisions.

The eco programme at rated capacity shall be used for the measurement and calculation of the Energy Efficiency Index (EEI), water consumption, programme duration, cleaning and drying performance, and airborne acoustical noise emissions of a household dishwasher model. The energy consumption, water consumption, programme duration, cleaning and drying performance shall be measured concurrently.

The eco programme water consumption (EPWC) is expressed in litres per cycle and rounded to one decimal place.

The duration of the eco programme  $(T_i)$  is expressed in hours and minutes and rounded to the nearest minute.

#### 1. ENERGY EFFICIENCY INDEX

For the calculation of the EEI of a household dishwasher model, the eco programme energy consumption ('EPEC') of the household dishwasher is compared to its standard programme energy consumption ('SPEC').

(a) The EEI is calculated as follows and rounded to one decimal place:

$$EEI = (EPEC/SPEC) \times 100$$

where:

EPEC is the eco programme energy consumption of the household dishwasher measured in kWh/cycle and rounded to three decimal places;

SPEC is the standard programme energy consumption of the household dishwasher.

- (b) The SPEC is calculated in kWh/cycle and rounded to three decimal places as follows:
  - (i) for household dishwashers with rated capacity  $ps \ge 10$  and width > 50 cm: SPEC =  $0.025 \times ps + 1.350$
  - (ii) for household dishwashers with rated capacity  $ps \le 9$  or width  $\le 50$  cm:

$$SPEC = 0.090 \times ps + 0.450$$

where ps is the number of place settings.

### 2. CLEANING PERFORMANCE INDEX

For the calculation of the cleaning performance index ( $I_c$ ) of a household dishwasher model, the cleaning performance of the eco programme is compared to the cleaning performance of a reference dishwasher.

The I<sub>C</sub> is calculated as follows and rounded to two decimal places:

$$I_{\rm C} = \exp(\ln I_{\rm C})$$

and

$$\ln I_{\rm C} = (1/n) \times \sum_{i=1}^{n} \ln(C_{\rm T,i}/C_{\rm R,i})$$

where:

 $C_{T,i}$  is the cleaning performance of the eco programme of the household dishwasher under test for one test run (i), rounded to two decimal places;

C<sub>R,i</sub> is the cleaning performance of the reference dishwasher for one test run (i), rounded to two decimal places;

n is the number of test runs.

3. DRYING PERFORMANCE INDEX

For the calculation of the drying performance index  $(I_D)$  of a household dishwasher model, the drying performance of the eco programme is compared to the drying performance of the reference dishwasher.

The I<sub>D</sub> is calculated as follows and rounded to two decimal places:

$$I_D = \exp(\ln I_D)$$

and

$$\ln I_{\rm D} = (1/n) \times \sum_{i=1}^n \ln(I_{{\rm D},i})$$

where:

I<sub>Di</sub> is the drying performance index of the eco programme of the household dishwasher under test for one test run (i);

n is the number of combined cleaning and drying test runs.

The I<sub>D,i</sub> is calculated as follows and rounded to two decimal places:

$$\ln I_{D,i} = \ln (D_{T,i}/D_{R,t})$$

where:

 $D_{T,i}$  is the average drying performance score of the eco programme of the household dishwasher under test for one test run (i), rounded to two decimal places;

D<sub>R,t</sub> is the target drying score of the reference dishwasher, rounded to two decimal places.

#### 4. LOW POWER MODES

The power consumption of the off mode ( $P_o$ ), standby mode ( $P_{sm}$ ) and where applicable delay start ( $P_{ds}$ ) are measured. The measured values are expressed in W and rounded to two decimal places.

During measurements of the power consumption in low power modes, the following shall be checked and recorded:

- the display or not of information,

- the activation or not of a network connection.

#### ANNEX IV

#### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the following procedure:

- (1) the Member State authorities shall verify one single unit of the model;
- (2) the model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point (2) of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and
  - (c) when the Member States authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and
  - (d) when the Member States authorities check the unit of the model, it complies with programme requirements in point 1, resource efficiency requirements in point 5 and information requirements in point 6 of Annex II; and
  - (e) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 1;
- (3) if the results referred to in point (2)(a), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation;
- (4) if the result referred to in point (2)(e) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models;
- (5) the model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 1;
- (6) if the result referred to in point (5) is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation;
- (7) the Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points (3) or (6).

The Member State authorities shall use the measurement and calculation methods set out in Annex III.

The Member State authorities shall only apply the verification tolerances that are set out in Table 1 and shall use only the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 1, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

| verification tolerances                              |                                                                                                                                                                                                                                                  |  |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Parameter                                            | Verification tolerances                                                                                                                                                                                                                          |  |
| Eco programme energy consumption (EPEC)              | The determined value (*) shall not exceed the declared value of EPEC by more than 5 %.                                                                                                                                                           |  |
| Eco programme water consumption (EPWC)               | The determined value (*) shall not exceed the declared value of EPWC by more than 5 %.                                                                                                                                                           |  |
| Cleaning performance index (I <sub>C</sub> )         | The determined value (*) shall not be less than the declared value of $\rm I_C$ by more than 14 %.                                                                                                                                               |  |
| Drying performance index (I <sub>D</sub> )           | The determined value (*) shall not be less than the declared value of $I_{\rm D}$ by more than 12 %.                                                                                                                                             |  |
| Programme duration (T <sub>t</sub> )                 | The determined value (*) shall not exceed the declared value by more than 5 % or 10 minutes, whichever is the longer.                                                                                                                            |  |
| Power consumption in off mode (P <sub>o</sub> )      | The determined value (*) of power consumption $P_0$ shall not exceed the declared value by more than 0,10 W.                                                                                                                                     |  |
| Power consumption in standby mode (P <sub>sm</sub> ) | The determined value (*) of power consumption $P_{sm}$ shall not exceed<br>the declared value by more than 10% if the declared value is higher<br>than 1,00 W, or by more than 0,10 W if the declared value is lower<br>than or equal to 1,00 W. |  |
| Power consumption in delay start (P <sub>ds</sub> )  | The determined value (*) of power consumption $P_{ds}$ shall not exceed<br>the declared value by more than 10% if the declared value is higher<br>than 1,00 W, or by more than 0,10 W if the declared value is lower<br>than or equal to 1,00 W. |  |
|                                                      |                                                                                                                                                                                                                                                  |  |

(\*) In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

### Table 1

## Verification tolerances

### ANNEX V

#### Benchmarks

1. INDICATIVE BENCHMARKS FOR HOUSEHOLD DISWASHERS ON WATER AND ENERGY CONSUMPTION, AIRBORNE ACOUSTICAL NOISE EMISSIONS AND PROGRAMME DURATION

At the time of entry into force of this Regulation, the best available technology on the market for household dishwashers in terms of their energy efficiency, energy and water consumption, airborne acoustical noise emissions and programme duration for the eco programme was identified as follows:

- (1) household dishwashers with 14 place settings (without heat pump technology):
  - (a) energy consumption: 0,67 kWh/cycle;
  - (b) water consumption: 9,9 L/cycle;
  - (c) airborne acoustic noise emissions: 44 dB(A);
  - (d) programme duration: 222 minutes (3 hours and 42 minutes);
- (2) household dishwashers with 13 place settings (with heat pump technology):
  - (a) energy consumption: 0,55 kWh/cycle;
  - (b) water consumption: 8,8 L/cycle;
  - (c) airborne acoustic noise emissions: 46 dB(A);
  - (d) programme duration: 295 minutes (4 hours and 55 minutes);
- (3) household dishwashers with 10 place settings:
  - (a) energy consumption: 0,66 kWh/cycle;
  - (b) water consumption: 9,5 L/cycle;
  - (c) airborne acoustic noise emissions: 44 dB(A);
  - (d) programme duration: 195 minutes (3 hours and 15 minutes);
- (4) household dishwashers with 6 place settings:
  - (a) energy consumption: 0,62 kWh/cycle;
  - (b) water consumption: 8,0 L/cycle;
  - (c) airborne acoustic noise emissions: 48 dB(A);
  - (d) programme duration: 225 minutes (3 hours and 45 minutes).
- 2. INDICATIVE BENCHMARKS FOR HOUSEHOLD DISHWASHERS ON POWER CONSUMPTION IN LOW POWER MODES

At the time of entry into force of this Regulation, the best available technology on the market for household dishwashers in terms of their power consumption in low power modes is:

- (1) standby mode: 0,20 W;
- (2) networked standby condition: Ethernet 0,60 W, Wi-Fi 0,70 W.

### **COMMISSION REGULATION (EU) 2019/2023**

#### of 1 October 2019

laying down ecodesign requirements for household washing machines and household washer-dryers pursuant to Directive 2009/125/EC of the European Parliament and of the Council, amending Commission Regulation (EC) No 1275/2008 and repealing Commission Regulation (EU) No 1015/2010

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (1), and in particular Article 15(1) thereof.

Whereas:

- Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related prod-(1)ucts which account for significant volumes of sales and trade in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) The Communication from the Commission COM(2016)773 (2) (ecodesign working plan) established by the Commission in application of Article 16(1) of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. The Working Plan identifies the energyrelated product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of implementing measures, as well as the review of Commission Regulation (EU) No 1015/2010 (3), Commission Delegated Regulation (EU) No 1061/2010 (4) and Commission Directive 96/60/EC (5).
- Measures from the Working Plan have an estimated potential to deliver a total in excess of 260 TWh of annual (3) final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Household washing machines and household washer-dryers are among the product groups listed in the Working Plan, with estimated annual electricity savings of 2,5 TWh, leading to GHG emission reductions of 0,8 Mt CO<sub>2</sub> eq/year, and estimated water savings of 711 million m<sup>3</sup> in 2030.
- (4) The Commission established ecodesign requirements for household washing machines in Regulation (EU) No 1015/2010 and pursuant to that Regulation, the Commission should review it in light of technological progress.
- (5) The Commission has reviewed Regulation (EU) No 1015/2010 and analysed the technical, environmental and economic aspects of household washing machines and household washer-dryers as well as real-life user behaviour. The review was carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the review were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- It appears from the review study that there is a need to revise the ecodesign requirements for household washing (6) machines and to establish ecodesign requirements for household washer-dryers. The requirements relate to the use of essential resources such as energy and water. There is also a need to introduce requirements related to resource efficiency such as reparability and recyclability.

<sup>(1)</sup> OJ L 285, 31.10.2009, p. 10.

<sup>(2)</sup> Communication from the Commission. Ecodesign working plan 2016-2019, COM(2016) 773 final, 30.11.2016.

<sup>(3)</sup> Commission Regulation (EU) No 1015/2010 of 10 November 2010 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for household washing machines (OJ L 293, 11.11.2010, p. 21).

Commission Delegated Regulation (EU) No 1061/2010 of 28 September 2010 supplementing Directive 2010/30/EU of the European  $(^{4})$ Parliament and of the Council with regard to energy labelling of household washing machines (OJ L 314, 30.11.2010, p. 47). Commission Directive 96/60/EC of 19 September 1996 implementing Council Directive 92/75/EEC with regard to energy labelling of

<sup>(&</sup>lt;sup>5</sup>) household combined washer-driers (OJ L 266, 18.10.1996, p. 1).

EN

The environmental aspects of household washing machines and household washer-dryers, which have been iden-(7) tified as significant for the purposes of this Regulation are the consumption of energy and water during the use phase, the generation of waste at the end of life and the emissions to air and water in the production phase (due to the extraction and processing of raw materials) and in the use phase (because of the consumption of electricity and water discharge).

(8) The annual energy and water consumption of products subject to this Regulation in the Union was estimated at 35,3 TWh and 2 496 million m<sup>3</sup> respectively in the Union in 2015. The projected electricity consumption of household washing machines and household washer-dryers in a business as usual scenario is estimated to decrease to 33,5 TWh in 2030 and the water consumption to decrease to 1764 million m3 in 2030. That decrease in energy and water consumption may be accelerated if the existing ecodesign requirements are updated. Finally, the service life-time of household washing machines and household washer-dryers has been estimated to have decreased in recent years to around 12,5 years and the trend is likely to continue in the absence of incentives.

- (9) The Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2015) 614 final (6) (circular economy action plan) and the Communication on the ecodesign working plan (7) underline the importance of using the ecodesign framework in order to support the move towards more resource efficient and circular economy. Directive 2012/19/EU (8) refers to Directive 2009/125/EC and indicate that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste electrical and electronic equipment (WEEE) by tackling the issues upstream. Therefore this Regulation should lay down appropriate requirements contributing to circular economy objectives.
- (10)Non-household washing machines and non-household washer-dryers have distinct characteristics and uses. They are subject to other regulatory work, in particular Directive 2006/42/EC of the European Parliament and of the Council on machinery (9), and should not be included in the scope of this Regulation. Provisions for household washing machines and household washer-dryers should apply to washing machines and washer-dryers with the same technical characteristics, regardless of the setting they are used in.
- Household washing machines and household washer-dryers with more than one drum should be subject to spe-(11)cific rules only if all their drums perform the same function. Otherwise, each drum should be considered as a separate household washing machine or as a separate household washer-dryer.
- Specific requirements for the low power modes of household washing machines and household washer-dryers (12)should be laid down. The requirements of Commission Regulation (EC) No 1275/2008 (10) should not apply to products covered by the scope of this Regulation. Regulation (EC) No 1275/2008 should be amended accordingly.
- The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those (13)methods should take into account the recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation organisations, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (11).
- (14)In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- To facilitate compliance checks, manufacturers, importers or authorised representatives should provide informa-(15)tion in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation.

<sup>(6)</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Closing the loop - An EU action plan for the circular economy (COM/2015/0614 final of 2.12.2015).

<sup>&</sup>lt;sup>(7)</sup> COM(2016) 773 final of 30.11.2016

<sup>(\*)</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment

<sup>(</sup>WEEE) (OJ L 197, 24.7.2012, p. 38). (\*) Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (OJ L 157, 9.6.2006, p. 24).

<sup>(10)</sup> Commission Regulation (EC) No 1275/2008 of 17 December 2008 implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment (OJ L 339, 18.12.2008, p. 45)

<sup>(11)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).
- (16) Where parameters of the technical documentation, as defined by this Regulation, are identical to parameters of the product information sheet defined by Commission Delegated Regulation (EU) 2019/2014 (<sup>12</sup>), manufacturers, importers or authorised representatives should enter the corresponding data into the product database defined by Regulation (EU) 2017/1369 of the European Parliament and of the Council (<sup>13</sup>) and should no longer need to provide them to market surveillance authorities as part of the technical documentation.
- (17) To ensure the effectiveness and credibility of the Regulation and to protect consumers, products that automatically alter their performance in test conditions to improve the declared parameters should not be allowed to be placed on the market.
- (18) In addition to the requirements laid down in this Regulation, indicative benchmarks for best available technologies should be identified to make information on the life-cycle environmental performance of products subject to this Regulation widely available and easily accessible, in accordance with point (2), part 3 of Annex I to Directive 2009/125/EC.
- (19) This Regulation should be reviewed in order to assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should be sufficient for all provisions to be implemented and show an effect on the market.
- (20) Regulation (EU) No 1015/2010 should be repealed.
- (21) In order to facilitate the transition between Regulation (EU) No 1015/2010 and this Regulation, the new name 'eco 40-60' should be allowed to be used as from the entry into force of this Regulation.
- (22) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by Article 19 of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

## Article 1

# Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market or the putting into service of electric mains-operated household washing machines and household washer-dryers, including built-in household washing machines and household washer-dryers and electric mains-operated household washing machines and household washer-dryers that can also be powered by batteries.

- 2. This Regulation shall not apply to:
- (a) washing machines and washer-dryers belonging to the scope of Directive 2006/42/EC;
- (b) battery-operated household washing machines and household washer-dryers that can be connected to the mains through an AC/DC converter purchased separately.
- 3. The requirements in points 1 to 6, 9(1)(a) and (c), and 9(2)(i) and (vii) of Annex II shall not apply to:
- (a) household washing machines with a rated capacity lower than 2 kg;
- (b) household washer-dryers with a rated washing capacity lower than 2 kg.

## Article 2

## Definitions

For the purpose of this Regulation the following definitions shall apply:

(1) 'mains' or 'electric mains' means the electricity supply from the grid of 230 (± 10 %) volts of alternating current at 50 Hz;

<sup>(&</sup>lt;sup>12</sup>) Commission Delegated Regulation (EU) 2019/2014 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of household washing machines and household washer-dryers and repealing Commission Delegated Regulation (EU) No 1061/2010 and Commission Directive 96/60/EC (see page 29 of this Official Journal)

<sup>(&</sup>lt;sup>13</sup>) Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1).

- (2) 'automatic washing machine' means a washing machine where the load is fully treated by the washing machine without the need for user intervention at any point during the programme;
- (3) 'household washing machine' means an automatic washing machine which cleans and rinses household laundry by using water, chemical, mechanical and thermal means, which also has a spin extraction function, and which is declared by the manufacturer in the Declaration of Conformity as complying with Directive 2014/35/EU of the European Parliament and of the Council (<sup>14</sup>) or with Directive 2014/53/EU of the European Parliament and of the Council (<sup>15</sup>);
- (4) 'household washer-dryer' means a household washing machine which, in addition to the functions of an automatic washing machine, in the same drum includes a means for drying the textiles by heating and tumbling, and which is declared by the manufacturer in the Declaration of Conformity as complying with Directive 2014/35/EU or with Directive 2014/53/EU;
- (5) 'built-in household washing machine' means a household washing machine that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top and/or bottom, and sides) by panels;
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;
- (6) 'built-in household washer-dryer' means a household washer-dryer that is designed, tested and marketed exclusively:
  - (a) to be installed in cabinetry or encased (top and/or bottom, and sides) by panels;
  - (b) to be securely fastened to the sides, top or floor of the cabinetry or panels; and
  - (c) to be equipped with an integral factory-finished face or to be fitted with a custom front panel;
- (7) 'multi-drum household washing machine' means a household washing machine equipped with more than one drum, whether in separate units or in the same casing;
- (8) 'multi-drum household washer-dryer' means a household washer-dryer equipped with more than one drum, whether in separate units or in the same casing;
- (9) 'equivalent model' means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;
- (10) 'model identifier' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer's, importer's or authorised representative's name;
- (11) 'product database' means a collection of data concerning products, which is arranged in a systematic manner and consists of a consumer-oriented public part, where information concerning individual product parameters is accessible by electronic means, an online portal for accessibility and a compliance part, with clearly specified accessibility and security requirements, as laid down in Regulation (EU) 2017/1369;
- (12) 'eco 40-60' means the name of the programme declared by the manufacturer, importer or authorised representative as able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same washing cycle, and to which the ecodesign requirements on energy efficiency, washing efficiency, rinsing effectiveness, programme duration and water consumption relate;

<sup>(&</sup>lt;sup>14</sup>) Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits (OJ L 96, 29.3.2014, p. 357).

<sup>(&</sup>lt;sup>15</sup>) Directive 2014/53/EU of the European Parliament and of the Council of 16 April 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive 1999/5/EC (OJ L 153, 22.5.2014, p. 62).

- (13) 'programme' means a series of operations that are pre-defined and which are declared by the manufacturer, importer or authorised representative as suitable for washing, drying or continuously washing and drying certain types of textile;
- (14) 'washing cycle' means a complete washing process as defined by a selected programme, consisting of a series of different operations including washing, rinsing, and spinning.

For the purpose of the annexes, additional definitions are set out in Annex I.

# Article 3

# **Ecodesign requirements**

The ecodesign requirements set out in Annex II and Annex VI shall apply from the dates indicated therein.

### Article 4

## Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of the conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain the declared values of parameters listed in points 3 to 7 of Annex II and the details and results of the calculations undertaken in accordance with Annex III.

- 3. Where the information included in the technical documentation for a particular model has been obtained:
- (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer, or
- (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

4. The technical documentation shall include the information in the order and as set out in Annex VI of Delegated Regulation (EU) 2019/2014. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to point 2(g) of Annex IV to Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Delegated Regulation (EU) 2019/2014.

# Article 5

# Verification procedure for market surveillance purposes

Member States' authorities shall apply the verification procedure set out in Annex IV when performing the market surveillance checks referred to in point 2 of Article 3 of Directive 2009/125/EC.

# Article 6

## Circumvention

The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any documentation provided.

The consumption of energy and water of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to the update. No performance change shall occur as a result of rejecting the update.

### Article 7

#### Indicative benchmarks

The indicative benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

#### Article 8

## Review

The Commission shall review this Regulation in the light of technological progress and shall present the results of this review, including, if appropriate, a draft revision proposal, to the Consultation Forum by 25 December 2025.

The review shall in particular focus on the following:

- (a) the improvement potential with regard to energy and environmental performance of household washing machines and household washer-dryers;
- (b) the evolution of consumer behaviour and the feasibility of a mandatory feedback mechanism on the loading of the appliance and the energy consumption of the selected programme;
- (c) the effectiveness of existing requirements on resource efficiency;
- (d) the appropriateness of setting additional resource efficiency requirements for products in accordance with the objectives of the circular economy, including whether more spare parts should be included;
- (e) the feasibility and appropriateness of new requirements on the automatic dosage of detergents and other additives;
- (f) the feasibility and appropriateness of new requirements for reducing microplastics in the water outlet, such as filters.

# Article 9

## Amendment to Regulation (EC) No 1275/2008

In point 1 of Annex I to Regulation (EC) No 1275/2008:

- the entry 'Washing machines' is deleted;
- the entry 'Other appliances for cooking and other processing of food, cleaning, and maintenance of clothes' is replaced by 'Other appliances for cooking and other processing of food, cleaning and maintenance of clothes with the exception of household washing machines and household washer-dryers'.

#### Article 10

#### Repeal

Regulation (EU) No 1015/2010 is repealed as of 1 March 2021.

### Article 11

# Transitional measures

As from 25 December 2019 until 28 February 2021, by way of derogation to the requirement in point 1 of Annex I to Regulation (EU) No 1015/2010, the indications of 'Standard 60 °C cotton programme' and 'Standard 40 °C cotton programme' shall not need to be displayed on the programme selection device of household washing machines or on the household washing machines display, if the following conditions are complied with:

- the 'Standard 60 °C cotton programme' and 'Standard 40 °C cotton programme' are clearly identifiable in the booklet of instructions and in the technical documentation with the meaning of point (2) of Article 4 of Regulation (EU) No 1015/2010; and
- the 'eco 40-60' programme is clearly displayed on the programme selection device of household washing machines or on the household washing machines display, in accordance with point 1(3) of Annex II to this Regulation.

# Article 12

# Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021. However, Article 6, first paragraph, and Article 11 shall apply from 25 December 2019.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 1 October 2019.

For the Commission The President Jean-Claude JUNCKER

### ANNEX I

# Definitions applicable for the annexes

The following definitions shall apply:

- (1) 'Energy Efficiency Index' (EEI) means the ratio of the weighted energy consumption to the standard cycle energy consumption;
- (2) 'drying cycle' means a complete drying process as defined by the required programme, consisting of a series of different operations including heating and tumbling;
- (3) 'complete cycle' means a washing and drying process, consisting of a washing cycle and a drying cycle;
- (4) 'continuous cycle' means a complete cycle without interruption of the process and with no need for user intervention at any point during the programme;
- (5) 'rated capacity' means the maximum mass in kilogram stated by the manufacturer, importer or authorised representative at 0,5 kg intervals of dry textiles of a particular type, which can be treated in one washing cycle of a household washing machine, or in one complete cycle of a household washer-dryer respectively, on the selected programme, when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;
- (6) 'rated washing capacity' means the maximum mass in kilogram stated by the manufacturer, importer or authorised representative at 0,5 kg intervals of dry textiles of a particular type, which can be treated in one washing cycle of a household washing machine, or in one washing cycle of a household washer-dryer respectively, on the selected programme, when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;
- (7) 'rated drying capacity' means the maximum mass in kilogram stated by the manufacturer, importer or authorised representative at 0,5 kg intervals of dry textiles of a particular type, which can be treated in one drying cycle of a household washer-dryer on the selected programme, when loaded in accordance with the manufacturer's, importer's or authorised representative's instructions;
- (8) 'weighted energy consumption  $(E_w)$ ' means the weighted average of the energy consumption of the washing cycle of a household washing machine or a household washer-dryer for the eco 40-60 programme at rated washing capacity, and at half and at a quarter of the rated washing capacity, expressed in kilowatt hour per cycle;
- (9) 'weighted energy consumption (E<sub>WD</sub>)' means the weighted average of the energy consumption of the household washer-dryer for the wash and dry cycle at rated capacity and at half of the rated capacity, expressed in kilowatt hour per cycle;
- (10) 'wash and dry' means the name of the complete cycle of a household washer-dryer, which consists of the eco 40-60 programme for the washing cycle, and of a drying cycle achieving cupboard dry status;
- (11) 'standard cycle energy consumption' (SCE) means the energy consumption taken as a reference as a function of the rated capacity of a household washing machine or of a household washer-dryer, expressed in kilowatt hour per cycle;
- (12) 'weighted water consumption  $(W_w)$ ' means the weighted average of the water consumption of the washing cycle of a household washing machine or of a household washer-dryer for the eco 40-60 programme at rated washing capacity, and at half and at a quarter of the rated washing capacity, expressed in litres per cycle;
- (13) 'weighted water consumption ( $W_{WD}$ )' means the weighted average of the water consumption of a household washer-dryer for the wash and dry cycle at rated capacity and at half of the rated capacity, expressed in litres per cycle;
- (14) 'washing efficiency index' means the ratio of the washing efficiency of the washing cycle of a household washing machine or of a household washer-dryer ( $I_W$ ), or of the complete cycle of a household washer-dryer ( $J_W$ ), to the washing efficiency of a reference household washing machine;

- (15) 'rinsing effectiveness' means the concentration of the residual content of linear alkylbenzene sulfonate (LAS) in the treated textiles after the washing cycle of a household washing machine or of a household washer-dryer ( $I_R$ ), or after the complete cycle of a household washer-dryer ( $I_R$ ), expressed in gram per kilogram of dry textile;
- (16) 'remaining moisture content' means for household washing machines and for the washing cycle of household washer-dryers, the amount of moisture contained in the load at the end of the washing cycle;
- (17) 'final moisture content' means for household washer-dryers the amount of moisture contained in the load at the end of the drying cycle;
- (18) 'cupboard dry' means the status of treated textiles dried in a drying cycle to a final moisture content of 0 %;
- (19) 'programme duration' ( $t_W$ ) means the length of time beginning with the initiation of the programme selected, excluding any user programmed delay, until the end of the programme is indicated and the user has access to the load;
- (20) 'cycle duration' ( $t_{WD}$ ) means, for the complete cycle of a household washer-dryer, the length of time beginning with the initiation of the programme selected for the washing cycle, excluding any user programmed delay, until the end of the drying cycle is indicated and the user has access to the load;
- (21) 'off mode' (P<sub>o</sub>) means a condition in which the household washing machine or the household washer-dryer is connected to the mains and is not providing any function; the following shall also be considered as off mode:
  - (a) conditions providing only an indication of off mode;
  - (b) conditions providing only functionalities intended to ensure electromagnetic compatibility pursuant to Directive 2014/30/EU of the European Parliament and of the Council (<sup>1</sup>);
- (22) 'standby mode' (P<sub>sm</sub>) means a condition where the household washing machine or the household washer-dryer is connected to the mains, and provides only the following functions, which may persist for an indefinite time:
  - (a) reactivation function, or reactivation function and a mere indication of enabled reactivation function; and/or
  - (b) reactivation function through a connection to a network; and/or
  - (c) information or status display; and/or
  - (d) detection function for emergency measures;
- (23) 'network' means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);
- (24) 'wrinkle guard function' means an operation of the household washing machine or of the household washer-dryer after completion of a programme to prevent excessive wrinkle building in the laundry;
- (25) 'delay start' (P<sub>ds</sub>) means a condition where the user has selected a specified delay to the beginning or end of the cycle of the selected programme;
- (26) 'spare part' means a separate part that can replace a part with the same or similar function in a product;

<sup>(&</sup>lt;sup>1</sup>) Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (OJ L 96, 29.3.2014, p. 79).

- (27) 'professional repairer' means an operator or undertaking which provides services of repair and professional maintenance of household washing machines or of household washer-dryers;
- (28) 'guarantee' means any undertaking by the retailer or a manufacturer to the consumer to:
  - (a) reimburse the price paid;
  - (b) replace, repair or handle the household washing machine and the household washer-dryer in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising.

# 5.12.2019 EN

## ANNEX II

## **Ecodesign requirements**

## 1. PROGRAMME REQUIREMENTS

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

- (1) household washing machines and household washer-dryers shall provide:
  - (a) a washing cycle called 'eco 40-60', which is able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same cycle;
  - (b) a washing cycle called '20 °C', which is able to clean lightly soiled cotton laundry, at a nominal temperature of 20 °C;

these cycles shall be clearly identifiable on the programme selection, on the display and through the network connection, depending on the functionalities provided by the household washing machine or household washer-dryer;

- (2) for the requirements set out in points 3(1), 3(3), 4(1), 4(2), 4(5), 5 and 6(1), the 'eco 40-60' programme shall be used;
- (3) the eco 40-60 programme shall be named 'eco 40-60' on the programme selection, on the display and through the network connection, depending on the functionalities provided by the household washing machine or the household washer-dryer;

the name 'eco 40-60' shall be used exclusively for this programme. The formatting of 'eco 40-60' is not restricted in terms of font, font size, case sensitivity or colour. No other programme may have in its name the term 'eco';

the eco 40-60 programme shall be set as the default programme for automatic programme selection or any function maintaining the selection of a programme, or, if there is no automatic programme selection, shall be available for direct selection without the need for any other selection such as a specific temperature or load;

the indications 'normal', 'daily', 'regular' and 'standard', and their translations in all EU official languages, shall not be used in programme names for household washing machines or household washer-dryers, either alone or in combination with other information.

# 2. WASH AND DRY CYCLE

From 1 March 2021, household washer-dryers shall meet the following requirements:

- (1) household washer-dryers shall provide a complete cycle for cotton laundry, named 'wash and dry':
  - which is continuous if the household washer-dryer provides a continuous cycle;
  - where the washing cycle is an eco 40-60 programme as defined in point 1; and
  - where the drying cycle achieves cupboard dry status;
- (2) the wash and dry cycle shall be clearly identifiable in the user instructions referred to in point 9 of this Annex;
- (3) if the household washer-dryer provides a continuous cycle, the rated capacity of the wash and dry cycle shall be the rated capacity for this cycle;
- (4) if the household washer-dryer does not provide a continuous cycle, the rated capacity of the wash and dry cycle shall be the lower value of the rated washing capacity of the eco 40-60 programme and the rated drying capacity of the drying cycle achieving cupboard dry status;
- (5) for the requirements set out in points 3(2), 3(4), 4(3), 4(4), 4(6) and 6(2), the wash and dry cycle shall be used.

# 3. ENERGY EFFICIENCY REQUIREMENTS

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

- (1) the Energy Efficiency Index (EEI<sub>W</sub>) for household washing machines and the washing cycle of household washerdryers shall be lower than 105;
- (2) the Energy Efficiency Index (EEI<sub>WD</sub>) for the wash and dry cycle of household washer-dryers shall be lower than 105.

From 1 March 2024, household washing machines with a rated capacity higher than 3 kg and household washer-dryers with a rated washing capacity higher than 3 kg shall meet the following requirements:

- (3) the  $\text{EEI}_{W}$  for household washing machines and the washing cycle of household washer-dryers shall be lower than 91.
- (4) the EEI<sub>WD</sub> for the wash and dry cycle of household washer-dryers shall be lower than 88.

The  $\text{EEI}_{W}$  and  $\text{EEI}_{WD}$  shall be calculated in accordance with Annex III.

### 4. FUNCTIONAL REQUIREMENTS

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

- (1) for household washing machines with a rated capacity higher than 3 kg and for the washing cycle of household washer-dryers with a rated capacity higher than 3 kg, the Washing Efficiency Index  $(I_w)$  of the eco 40-60 programme shall be greater than 1,03 for each of the following loading sizes: rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity;
- (2) for household washing machines with a rated capacity lower than or equal to 3 kg and for the washing cycle of household washer-dryers with a rated capacity lower than or equal to 3 kg, the Washing Efficiency Index (I<sub>w</sub>) of the eco 40-60 programme shall be greater than 1,00 at rated washing capacity;
- (3) for household washer-dryers with a rated capacity higher than 3 kg, the Washing Efficiency Index  $(J_w)$  of the wash and dry cycle shall be greater than 1,03 at rated capacity and at half of the rated capacity;
- (4) for household washer-dryers with a rated capacity lower than or equal to 3 kg, the Washing Efficiency Index  $(J_w)$  of the wash and dry cycle shall be greater than 1,00 at rated capacity;
- (5) for household washing machines with a rated capacity higher than 3 kg and for the washing cycle of household washer-dryers with a rated capacity higher than 3 kg, the Rinsing Effectiveness ( $I_R$ ) of the eco 40-60 programme shall be smaller than or equal to 5,0 g/kg for each of the following loading sizes: rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity;
- (6) for household washer-dryers with a rated capacity higher than 3 kg, the Rinsing Effectiveness ( $J_R$ ) of the wash and dry cycle shall be smaller than or equal to 5,0 g/kg at rated capacity and at half of the rated capacity.

The  $I_w$ ,  $J_w$ ,  $I_R$  and  $J_R$  shall be calculated in accordance with Annex III.

# 5. REQUIREMENTS ON DURATION

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

the duration of the eco 40-60 programme ( $t_w$ ), expressed in hours and minutes and rounded to the nearest minute, shall be lower than or equal to the time limit  $t_{cap}$ , which depends on the rated capacity as follows:

(1) for the rated washing capacity, the time limit is given by the following equation:

$$t_{cap}(in min) = 137 + c \times 10,2$$

with a maximum of 240 minutes;

(2) for half of the rated washing capacity and a quarter of the rated washing capacity, the time limit is given by the following equation:

$$t_{cap}(in min) = 120 + c \times 6$$

with a maximum of 180 minutes;

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer-dryer for the eco 40-60 programme.

## 6. WEIGHTED WATER CONSUMPTION REQUIREMENT

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

(1) for household washing machines and the washing cycle of household washer-dryers, the weighted water consumption (W<sub>w</sub>, in litres/cycle) for the eco 40-60 programme shall be:

$$W_W \le 2,25 \times c + 30$$

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer-dryer for the eco 40-60 programme;

(2) for household washer-dryers, the weighted water consumption (W<sub>WD</sub>, in litres/cycle) for the wash and dry cycle shall be:

$$W_{WD} \le 10 \times d + 30$$

where d is the rated capacity of the household washer-dryer for the wash and dry cycle.

The W<sub>W</sub> and W<sub>WD</sub> shall be calculated in accordance with Annex III.

7. LOW POWER MODES

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

- (1) household washing machines and household washer-dryers shall have an off-mode or a stand-by mode or both. The power consumption of these modes shall not exceed 0,50 W;
- (2) if the stand-by mode includes the display of information or status, the power consumption of this mode shall not exceed 1,00 W;
- (3) if the stand-by mode provides for a connection to a network and provides networked standby as defined in Commission Regulation (EU) No 801/2013 <sup>(1)</sup>, the power consumption of this mode shall not exceed 2,00 W;

<sup>(1)</sup> Commission Regulation (EU) No 801/2013 of 22 August 2013 amending Regulation (EC) No 1275/2008 with regard to ecodesign requirements for standby, off mode electric power consumption of electrical and electronic household and office equipment, and amending Regulation (EC) No 642/2009 with regard to ecodesign requirements for televisions (OJ L 225, 23.8.2013).

- (4) at the latest 15 minutes after the household washing machine and household washer-dryer have been switched on or after the end of any programme and associated activities or after interruption of the wrinkle guard function or after any other interaction with the household washing machine and household washer-dryer, if no other mode, including emergency measures, is triggered, the household washing machine and household washer-dryer shall switch automatically to off-mode or standby mode;
- (5) if the household washing machine and household washer-dryer provide for a delay start, the power consumption of this condition, including any standby mode, shall not exceed 4,00 W. The delay start shall not be programmable by the user for more than 24 h;
- (6) any household washing machine and any household washer-dryer that can be connected to a network shall provide the possibility to activate and deactivate the network connection(s). The network connection(s) shall be deactivated by default.

### 8. RESOURCE EFFICIENCY REQUIREMENTS

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

- (1) availability of spare parts:
  - (a) manufacturers, importers or authorised representatives of household washing machines and household washerdryers shall make available to professional repairers at least the following spare parts, for a minimum period of 10 years after placing the last unit of the model on the market:
    - motor and motor brushes;
    - transmission between motor and drum;
    - pumps;
    - shock absorbers and springs;
    - washing drum, drum spider and related ball bearings (separately or bundled);
    - heaters and heating elements, including heat pumps (separately or bundled);
    - piping and related equipment including all hoses, valves, filters and aquastops (separately or bundled);
    - printed circuit boards;
    - electronic displays;
    - pressure switches;
    - thermostats and sensors;
    - software and firmware including reset software;
  - (b) manufacturers, importers or authorised representatives of household washing machines and household washerdryers shall make available to professional repairers and end-users at least the following spare parts: door, door hinge and seals, other seals, door locking assembly and plastic peripherals such as detergent dispensers, for a minimum period of 10 years after placing the last unit of the model on the market;
  - (c) manufacturers, importers or authorised representatives of household washing machines and household washerdryers shall ensure that the spare parts mentioned in points (a) and (b) can be replaced with the use of commonly available tools and without permanent damage to the household washing machine or household washer-dryer;

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- (d) the list of spare parts concerned by point (a) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts;
- (e) the list of spare parts concerned by point (b) and the procedure for ordering them and the repair instructions shall be publicly available on the free access website of the manufacturer, importer or authorised representative, when placing the first unit of a model on the market and until the end of the period of availability of these spare parts;
- (2) maximum delivery time of spare parts:

during the period mentioned under (1), the manufacturer, importer or authorised representative shall ensure the delivery of the spare parts within 15 working days after having received the order;

in the case of spare parts concerned by point (1)(a), the availability of spare parts may be limited to professional repairers registered in accordance with point (3)(a) and (b);

(3) access to Repair and Maintenance Information:

after a period of two years after the placing on the market of the first unit of a model and until the end of the period mentioned under (1), the manufacturer, importer or authorised representative shall provide access to the household washing machine or household washer-dryer repair and maintenance information to professional repairers in the following conditions:

- (a) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, the manufacturers, importers or authorised representatives may require the professional repairer to demonstrate that:
  - (i) the professional repairer has the technical competence to repair household washing machines and household washer-dryers and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
  - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity regardless of whether this is required by the Member State;
- (b) manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of request;
- (c) manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information;
- (d) once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The information may be provided for an equivalent model or model of the same family, if relevant;
- (e) the household washing machine or household washer-dryer repair and maintenance information referred to in (a) shall include:
  - the unequivocal household washing machine or household washer-dryer identification;
  - a disassembly map or exploded view;
  - technical manual of instructions for repair;
  - list of necessary repair and test equipment;
  - component and diagnosis information (such as minimum and maximum theoretical values for measurements);
  - wiring and connection diagrams;

- diagnostic fault and error codes (including manufacturer-specific codes, where applicable);
- instructions for installation of relevant software and firmware including reset software; and
- information on how to access data records of reported failure incidents stored on the household washing machine or washer-dryer (where applicable);
- (4) information requirements for refrigerant gases:

without prejudice to Regulation (EU) No 517/2014 of the European Parliament and of the Council (<sup>2</sup>), for household washing machines and household washer-dryers equipped with a heat pump, the chemical name of the refrigerant gas used, or equivalent reference such as a commonly used and understood symbol, label or logo, shall be displayed permanently and in a visible and readable way on the exterior of the household washing machines or household washer-dryers, for example on the back panel. More than one reference can be used for the same chemical name;

- (5) requirements for dismantling for material recovery and recycling while avoiding pollution:
  - manufacturers, importers or authorised representatives shall ensure that household washing machines and household washer-dryers are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed with the use of commonly available tools;
  - manufacturers, importers or authorised representatives shall fulfil the obligations laid down in point 1 of Article 15 of Directive 2012/19/EU.

# 9. INFORMATION REQUIREMENTS

From 1 March 2021, household washing machines and household washer-dryers shall meet the following requirements:

user and installer instructions shall be provided in the form of a user manual on a free access website of the manufacturer, importer or authorised representative, and shall include:

- (1) the following general information:
  - (a) information that the eco 40-60 programme is able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same cycle, and that this programme is used to assess the compliance with the EU ecodesign legislation;
  - (b) information that the most efficient programmes in terms of energy consumption are generally those that perform at lower temperatures and longer duration;
  - (c) for household washer-dryers: information that the wash and dry cycle is able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same cycle, and to dry it in such a way that it can be immediately stored in a cupboard, and that this programme is used to assess the compliance with the EU ecodesign legislation;
  - (d) information that loading the household washing machine or the household washer-dryer up to the capacity indicated by the manufacturer for the respective programmes will contribute to energy and water savings;
  - (e) recommendations on the type of detergents suitable for the various washing temperatures and washing programmes;
  - (f) information that noise and remaining moisture content are influenced by the spinning speed: the higher the spinning speed in the spinning phase, the higher the noise and the lower the remaining moisture content;
  - (g) information on how to activate and deactivate the network connection (if applicable) and impact on energy consumption;

<sup>(2)</sup> Regulation (EU) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006 (OJ L 150, 20.5.2014, p. 195).

- (h) instruction on how to find the model information stored in the product database, as defined in Regulation (EU) 2019/2014 by means of a weblink that links to the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product;
- (2) values for the following parameters:
  - (a) rated capacity in kg;
  - (b) programme duration, expressed in hours and minutes;
  - (c) energy consumption, expressed in kWh/cycle;
  - (d) water consumption, expressed in litres/cycle;
  - (e) maximum temperature reached for minimum 5 minutes inside the laundry being treated in the washing cycle, expressed in degrees centigrade; and
  - (f) remaining moisture content after the washing cycle, expressed in percentage of water content, and spinning speed at which this was achieved;

for each of the following programmes (at least):

- (i) the eco 40-60 programme at the rated capacity, half of the rated capacity and a quarter of the rated capacity;
- (ii) the 20 °C programme at the rated capacity for this programme;
- (iii) one cotton programme at nominal temperature higher than or equal to 60 °C (if present) at the rated capacity for this programme;
- (iv) one programme for other textiles than cotton or a mix of textiles (if present) at the rated capacity for this programme;
- (v) one programme for the quick washing of lightly soiled laundry (if present) at the rated capacity for this programme;
- (vi) one programme for heavily soiled textiles (if present) at the rated capacity for this programme;
- (vii) for household washer-dryers: the wash and dry cycle at the rated capacity and at half of the rated capacity; and

the information that the values given for programmes other than the eco 40-60 programme and the wash and dry cycle are indicative only;

- (3) the user instructions shall also include instructions for the user to perform maintenance operations. Such instructions shall as a minimum include instructions for:
  - (a) correct installation (including level positioning, connection to mains, connection to water inlets, cold and/or hot if appropriate);
  - (b) correct use of detergent, softeners and other additives, and main consequences of incorrect dosage;
  - (c) foreign object removal from the household washing machine or household washer-dryer;
  - (d) periodic cleaning, including optimal frequency, and limescale prevention and procedure;
  - (e) door opening between cycles, if appropriate;
  - (f) periodic checks of filters, including optimal frequency, and procedure;
  - (g) identification of errors, the meaning of the errors, and the action required, including identification of errors requiring professional assistance;

(h) how to access professional repair (internet webpages, addresses, contact details);

such instructions shall also include information on:

- (i) any implications of self-repair or non-professional repair for the safety of the end-user and for the guarantee;
- (j) the minimum period during which the spare parts for the household washing machine or the household washer-dryer are available.

#### ANNEX III

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and in line with the following provisions.

When measuring the parameters defined in Annex II and in this annex for the eco 40-60 programme and for the wash and dry cycle, the highest spin speed option for the eco 40-60 programme shall be used at rated capacity, at half of the rated capacity and at a quarter of the rated capacity.

For household washing machines with a rated capacity lower than or equal to 3 kg and for household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the parameters for the eco 40-60 programme and for the wash and dry cycle shall be measured at rated capacity only.

The duration of the eco 40-60 programme ( $t_W$ ) and the duration of the wash and dry cycle ( $t_{WD}$ ) shall be expressed in hours and minutes and rounded to the nearest minute.

# 1. ENERGY EFFICIENCY INDEX

1.1. Energy Efficiency Index (EEI<sub>W</sub>) of household washing machines and the washing cycle of household washer-dryers

For the calculation of the  $\text{EEI}_W$ , the weighted energy consumption of the eco 40-60 programme at the rated washing capacity, half of the rated washing capacity and a quarter of the rated washing capacity is compared to its standard cycle energy consumption.

(a) The  $EEI_W$  is calculated as follows, and is rounded to one decimal place:

$$EEI_W = (E_W/SCE_W) \times 100$$

where:

 $E_W$  is the weighted energy consumption of the household washing machine or of the washing cycle of the household washer-dryer;

 $SCE_W$  is the standard cycle energy consumption of the household washing machine or the washing cycle of the household washer-dryer.

(b) The  $SCE_W$  is calculated in kWh per cycle as follows, and is rounded to three decimal places:

$$SCE_W = -0.0025 \times c^2 + 0.0846 \times c + 0.3920$$

where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer-dryer for the eco 40-60 programme.

(c) The  $E_{\rm W}$  is calculated in kWh per cycle as follows, and is rounded to three decimal places:

$$E_W = A \times E_{W,full} + B \times E_{W,\frac{1}{2}} + C \times E_{W,\frac{1}{4}}$$

where:

 $E_{W,full}$  is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at the rated washing capacity and rounded to three decimal places;

 $E_{W,1/2}$  is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at half of the rated washing capacity and rounded to three decimal places;

 $E_{W,1/4}$  is the energy consumption of the household washing machine or of the washing cycle of the household washer-dryer for the eco 40-60 programme at a quarter of the rated washing capacity and rounded to three decimal places;

A is the weighting factor for the rated washing capacity and rounded to three decimal places;

B is the weighting factor for half of the rated washing capacity and rounded to three decimal places;

C is the weighting factor for a quarter of the rated washing capacity and rounded to three decimal places;

for household washing machines with a rated capacity lower than or equal to 3 kg and for household washerdryers with a rated washing capacity lower than or equal to 3 kg. A shall be equal to 1; B and C shall be equal to 0;

for other household washing machines and household washer-dryers, the values of the weighting factors depend on the rated capacity according to the following equations:

```
A = -0.0391 \times c + 0.6918B = -0.0109 \times c + 0.3582C = 1 - (A + B)
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where c is the rated capacity of the household washing machine or the rated washing capacity of the household washer dryer.

1.2. Energy Efficiency Index (EEI<sub>WD</sub>) of the complete cycle of household washer-dryers

For the calculation of the  $EEI_{WD}$  of a household washer-dryer model, the weighted energy consumption of the wash and dry cycle at the rated capacity and half of the rated capacity is compared to its standard cycle energy consumption.

(a) The  $EEI_{WD}$  is calculated as follows, and is rounded to one decimal place:

$$EEI_{WD} = (E_{WD}/SCE_{WD}) \times 100$$

where:

 $E_{\text{WD}}$  is the weighted energy consumption of the complete cycle of the household washer-dryer;

 $SCE_{WD}$  is the standard cycle energy consumption of the complete cycle of the household washer-dryer.

(b) The SCE<sub>WD</sub> is calculated in kWh per cycle as follows, and is rounded to three decimal places:

SCE<sub>WD</sub> = -0,0502 × d<sup>2</sup> + 1,1742 × d - 0,644

where d is the rated capacity of the household washer-dryer for the wash and dry cycle.

- (c) For household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the weighted energy consumption is the energy consumption at rated capacity and rounded to three decimal places.
- (d) For other household washer-dryers, the weighted energy consumption (E<sub>WD</sub>) is calculated in kWh per cycle as follows, and is rounded to three decimal places:

$$E_{WD} = \frac{\left[3 \times E_{WD,full} + 2 \times E_{WD,\frac{1}{2}}\right]}{5}$$

where:

 $E_{WD,full}$  is the energy consumption of the household washer-dryer for the wash and dry cycle at rated capacity and rounded to three decimal places;

 $E_{WD,1/2}$  is the energy consumption of the household washer-dryer for the wash and dry cycle at half of the rated capacity and rounded to three decimal places.

## 2. WASHING EFFICIENCY INDEX

The washing efficiency index of household washing machines and of the washing cycle of household washer-dryers (Iw) and the washing efficiency index of the complete cycle of household washer-dryers (Jw) shall be calculated using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, and rounded to two decimal places.

#### 3. RINSING EFFECTIVENESS

The rinsing effectiveness of household washing machines and of the washing cycle of household washer-dryers ( $I_R$ ) and the rinsing effectiveness of the complete cycle of household washer-dryers ( $J_R$ ) shall be calculated using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible method based on the detection of the linear alkylbenzene sulfonate (LAS) marker, and rounded to one decimal place.

#### 4. MAXIMUM TEMPERATURE

The maximum temperature reached for 5 minutes inside the laundry being treated in the household washing machines and in the washing cycle of household washer-dryers shall be determined using harmonised standards the reference numbers of which have been published for this purpose in the *Official Journal of the European Union*, or other reliable, accurate and reproducible method and rounded to the nearest integer.

## 5. WEIGHTED WATER CONSUMPTION

(1) The weighted water consumption  $(W_w)$  of a household washing machine or of the washing cycle of a household washer-dryer is calculated in litres as follows, and is rounded to the nearest integer:

$$W_{t} = (A \times W_{W,full} + B \times W_{W,1/2} + C \times W_{W,1/4})$$

where:

 $W_{W,full}$  is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for the eco 40-60 programme at rated washing capacity, in litres and rounded to one decimal place;

 $W_{W,1/4}$  is the water consumption of the household washing machine or of the washing cycle of a household washer-dryer for the eco 40-60 programme at a quarter of the rated washing capacity, in litres and rounded to one decimal place;

A, B and C are the weighting factors as described in point 1.1(c).

(2) For household washer-dryers with a rated washing capacity lower than or equal to 3 kg, the weighted water consumption is the water consumption at rated capacity and rounded to the nearest integer.

For other household washer-dryers, the weighted water consumption  $(W_{WD})$  of the wash and dry cycle of a household washer-dryer is calculated as follows, and is rounded to the nearest integer:

$$W_{WD} = \frac{\left[3 \times E_{WD,full} + 2 \times E_{WD,\frac{1}{2}}\right]}{5}$$

where:

 $W_{WD,full}$  is the water consumption of the wash and dry cycle of a household washer-dryer at rated capacity, in litres and rounded to one decimal place;

 $W_{WD,t/2}$  is the water consumption of the wash and dry cycle of a household washer-dryer at half of the rated capacity, in litres and rounded to one decimal place.

# 6. REMAINING MOISTURE CONTENT

The weighted remaining moisture content after washing (D) of a household washing machine and of the washing cycle of a household washer-dryer is calculated in percentage as follows, and is rounded to the nearest whole percent:

$$D = \left[A \times D_{\text{full}} + B \times D\frac{1}{2} + C \times D\frac{1}{4}\right]$$

where:

 $D_{\text{full}}$  is the remaining moisture content for the eco 40-60 programme at rated washing capacity, in percentage and rounded to one decimal place;

 $D_{1/2}$  is the remaining moisture content of the eco 40-60 programme at half of the rated washing capacity in percentage and rounded to one decimal place;

 $D_{1/4}$  is the remaining moisture content of the eco 40-60 programme at a quarter of the rated washing capacity in percentage and rounded to one decimal place;

A, B and C are the weighting factors as described in point 1.1(c).

## 7. FINAL MOISTURE CONTENT

For the drying cycle of a household washer-dryer, cupboard dry status corresponds to 0 % final moisture content, which is the thermodynamic equilibrium of the load with the ambient air conditions of temperature (tested at  $20 \pm 2$  °C) and relative humidity (tested at  $65 \pm 5$  %).

The final moisture content is calculated in accordance with the harmonised standards the reference numbers of which have been published for this purpose in the Official Journal of the European Union and rounded to one decimal place.

# 8. LOW POWER MODES

The power consumption of the off mode ( $P_o$ ), standby mode ( $P_{sm}$ ) and where applicable delay start ( $P_{ds}$ ) are measured. The measured values are expressed in W and rounded to two decimal places.

During measurements of the power consumption in low power modes, the following shall be checked and recorded:

- the display or not of information;
- the activation or not of a network connection.

If the household washing machine and household washer-dryer provides for a wrinkle guard function, this operation shall be interrupted by opening the household washing machine or household washer-dryer door, or any other appropriate intervention 15 minutes before the measurement of energy consumption.

### ANNEX IV

## Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the following procedure:

- (1) the Member State authorities shall verify one single unit of the model;
- (2) the model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point (2) of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and
  - (c) when the Member State authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and
  - (d) when the Member State authorities check the unit of the model, it complies with the programme requirements in points 1 and 2, resource efficiency requirements in point 8 and information requirements in point 9 of Annex II; and
  - (e) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 1;
- (3) if the results referred to in point (2)(a), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation;
- (4) if the result referred to in point (2)(e) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models;
- (5) the model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 1;
- (6) if the result referred to in point (5) is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation;
- (7) the Member State authorities shall provide all relevant information to the authorities the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points (3) or (6).

The Member State authorities shall use the measurement and calculation methods set out in Annex III.

The Member State authorities shall only apply the verification tolerances that are set out in Table 1 and shall use only the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 1, no other verification tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

| Table | 1 |  |
|-------|---|--|
|       |   |  |

# Verification tolerances

| Parameter                                                   | Verification tolerances                                                                                                                                                                                                                          |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $E_{W,full}, E_{W,l'2}, E_{W,1/4}, E_{WD,full}, E_{WD,l'2}$ | The determined value (*) shall not exceed the declared value of $E_{W,full}$ , $E_{W,1/4}$ , $E_{WD,full}$ and $E_{WD,1/2}$ , respectively, by more than 10 %.                                                                                   |
| Weighted energy consumption ( $E_W$ and $E_{WD}$ )          | The determined value (*) shall not exceed the declared value of $E_W$ , respectively $E_{WD}$ , by more than 10 %.                                                                                                                               |
| $W_{W,full}, W_{W,1/4}, W_{WD,full}, W_{WD,1/2}$            | The determined value (*) shall not exceed the declared value of $W_{W,full}$ , $W_{W,2}$ , $W_{W,1/4}$ , $W_{WD,full}$ and $W_{WD,2/2}$ , respectively, by more than 10 %.                                                                       |
| Weighted water consumption ( $W_W$ and $W_{WD}$ )           | The determined value (*) shall not exceed the declared value of $W_{W}$ , respectively $W_{WD}$ , by more than 10 %.                                                                                                                             |
| Washing efficiency index ( $I_W$ and $J_W$ )                | The determined value (*) shall not be less than the declared value of $I_W$ , respectively $J_w$ , by more than 8 %.                                                                                                                             |
| Rinsing effectiveness (I <sub>R</sub> and J <sub>R</sub> )  | The determined value (*) shall not exceed the declared value of $I_R$ , respectively $J_R$ , by more than 1,0 g/kg.                                                                                                                              |
| Duration of the eco 40-60 programme ( $t_w$ )               | The determined value (*) of the programme duration shall not exceed the declared value of $t_W$ by more than 5 % or by more than 10 minutes, whichever is the smaller.                                                                           |
| Duration of the wash and dry cycle ( $t_{WD}$ )             | The determined value of the cycle duration shall not exceed the declared value of $t_{WD}$ by more than 5 % or by more than 10 minutes, whichever is the smaller.                                                                                |
| Maximum temperature inside the laundry (T)                  | The determined value shall not be less than the declared values of T by more than 5 K and it shall not exceed the declared value of T by more than 5 K.                                                                                          |
| $D_{\text{full}}$ , $D_{y_2}$ , $D_{1/4}$                   | The determined value (*) shall not exceed the declared value of $D_{full}$ , $D_{1/2}$ and $D_{1/4}$ , respectively, by more than 10 %.                                                                                                          |
| Remaining moisture content after washing (D)                | The determined value (*) shall not exceed the declared value of D by more than 10 %.                                                                                                                                                             |
| Final moisture content after drying                         | The determined value (*) shall not exceed 3,0 %.                                                                                                                                                                                                 |
| Power consumption in off mode (P <sub>o</sub> )             | The determined value (*) of power consumption $P_o$ shall not exceed the declared value by more than 0,10 W.                                                                                                                                     |
| Power consumption in standby mode (P <sub>sm</sub> )        | The determined value (*) of power consumption $P_{sm}$ shall not exceed<br>the declared value by more than 10% if the declared value is higher<br>than 1,00 W, or by more than 0,10 W if the declared value is lower<br>than or equal to 1,00 W. |
| Power consumption in delay start (P <sub>ds</sub> )         | The determined value (*) of power consumption $P_{ds}$ shall not exceed<br>the declared value by more than 10% if the declared value is higher<br>than 1,00 W, or by more than 0,10 W if the declared value is lower<br>than or equal to 1,00 W. |

(\*) In the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

### ANNEX V

### Benchmarks

1. INDICATIVE BENCHMARKS FOR HOUSEHOLD WASHING MACHINES ON WATER AND ENERGY CONSUMPTION, WASHING EFFICIENCY AND AIRBORNE ACOUSTICAL NOISE EMISSIONS

At the time of entry into force of this Regulation, the best available technology on the market for household washing machines, in terms of their water and energy consumptions and airborne acoustical noise emissions during washing/spinning for the standard 60 °C cotton programme at rated capacity and half of the rated capacity and for the standard 40 °C cotton programme at half of the rated capacity, was identified as follows (<sup>1</sup>):

- (1) household washing machine with a rated capacity of 5 kg:
  - (a) energy consumption: 0,56 kWh/cycle (or 0,11 kWh/kg) corresponding to an overall annual consumption of 82 kWh/year;
  - (b) water consumption: 40 L/cycle, corresponding to 8 800 L/year for 220 cycles;
  - (c) airborne acoustical emissions during washing/spinning: 58/82 dB(A);
- (2) household washing machine with a rated capacity of 6 kg:
  - (a) energy consumption: 0,55 kWh/cycle (or 0,092 kWh/kg) corresponding to an overall annual consumption of 122 kWh/year;
  - (b) water consumption: 40,45 L/cycle, corresponding to 8 900 L/year for 220 cycles;
  - (c) airborne acoustical emissions during washing/spinning: 47/77 dB(A);
- (3) household washing machine with a rated capacity of 7 kg:
  - (a) energy consumption: 0,6 kWh/cycle (or 0,15 kWh/kg) corresponding to an overall annual consumption of 124 kWh/year;
  - (b) water consumption: 39 L/cycle, corresponding to 8 500 L/year for 220 cycles;
  - (c) airborne acoustical emissions during washing/spinning: 52/73 dB(A);
- (4) household washing machine with a rated capacity of 8 kg (when equipped with a heat pump):
  - (a) energy consumption: 0,52 kWh/cycle (or 0,065 kWh/kg) corresponding to an overall annual consumption of 98 kWh/year;
  - (b) water consumption: 44,55 L/cycle, corresponding to 9 800 L/year for 220 cycles;
- (5) household washing machine with a rated capacity of 8 kg (when not equipped with heat pump technology):
  - (a) energy consumption: 0,54 kWh/cycle (or 0,067 kWh/kg) corresponding to an overall annual consumption of 116 kWh/year;
  - (b) water consumption: 36,82 L/cycle, corresponding to 8 100 L/year for 220 cycles;

<sup>(&</sup>lt;sup>1</sup>) For evaluation of the water and energy consumptions and washing efficiency, the calculation methods set out in Annex II of Regulation (EU) No 1015/2010 with regard to ecodesign requirements for household washing-machines was used; for airborne acoustical noise emissions during washing/spinning, the standard measurement according to EN 60704 was used

- (6) household washing machine with a rated capacity of 9 kg:
  - (a) energy consumption: 0,35 kWh/cycle (or 0,038 kWh/kg) corresponding to an overall annual consumption of 76 kWh/year;
  - (b) water consumption: 47,72 L/cycle, corresponding to 10 499 L/year for 220 cycles.
- 2. INDICATIVE BENCHMARKS FOR HOUSEHOLD WASHER-DRYERS ON WATER AND ENERGY CONSUMPTION, WASHING EFFICIENCY AND AIRBORNE ACOUSTICAL NOISE EMISSIONS

At the time of entry into force of this Regulation, the best available technology on the market for household washerdryers, in terms of their water and energy consumptions and airborne acoustical noise emissions during washing/ spinning/drying for the standard 60 °C cotton washing cycle at rated capacity and the 'dry cotton' drying cycle, is identified as follows (<sup>2</sup>):

- (1) household washer dryer with a rated washing capacity of 6 kg:
  - (a) energy consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 3,64 kWh/cycle corresponding to an overall annual consumption of 800,8 kWh/ year;
  - (b) energy consumption of a washing cycle (washing and spinning only) at rated capacity and at standard 60 °C cotton programme: 0,77 kWh/cycle corresponding to an overall annual consumption of 169,4 kWh/year;
  - (c) water consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 78 L/cycle, corresponding to 17 160 L/year for 220 cycles;
  - (d) airborne acoustic emissions during washing/spinning/drying: 51/77/66 dB(A);
- (2) household washer dryer with a rated washing capacity of 7 kg:
  - (a) energy consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 4,76 kWh/cycle corresponding to an overall annual consumption of 1 047 kWh/ year;
  - (b) energy consumption of a washing cycle (washing and spinning only) at rated capacity and at standard 60 °C cotton programme: 0,8 kWh/cycle corresponding to an overall annual consumption of 176 kWh/year;
  - (c) water consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 72 L/cycle, corresponding to 15 840 L/year for 220 cycles;
  - (d) airborne acoustic emissions during washing/spinning/drying: 47/73/58 dB(A);
- (3) household washer dryer with a rated washing capacity of 8 kg:
  - (a) energy consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 3,8 kWh/cycle corresponding to an overall annual consumption of 836 kWh/year;
  - (b) energy consumption of a washing cycle (washing and spinning only) at rated capacity and at standard 60 °C cotton programme: 1,04 kWh/cycle corresponding to an overall annual consumption of 229 kWh/year;
  - (c) water consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 70 L/cycle, corresponding to 15 400 L/year for 220 cycles;
  - (d) airborne acoustic emissions during washing/spinning/drying: 49/73/66 dB(A);

<sup>(2)</sup> For evaluation of the water and energy consumptions and washing performance, the calculation methods set out in Directive 96/60/EC with regard to energy labelling of washer-driers was used; for airborne acoustical noise emissions during washing/ spinning/drying, the standard measurement according to EN 60704 was used.

- (4) household washer dryer with a rated washing capacity of 9 kg:
  - (a) energy consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 3,67 kWh/cycle corresponding to an overall annual consumption of 807 kWh/ year;
  - (b) energy consumption of a washing cycle (washing and spinning only) at rated capacity and at standard 60 °C cotton programme: 1,09 kWh/cycle corresponding to an overall annual consumption of 240 kWh/year;
  - (c) water consumption of a complete cycle (washing, spinning and drying) at rated capacity and at standard 60 °C cotton programme: 69 L/cycle, corresponding to 15 180 L/year for 220 cycles;
  - (d) airborne acoustic emissions during washing/spinning/drying: 49/75/66 dB(A).

### ANNEX VI

### Multi-drum household washing machines and multi-drum household washer-dryers

For multi-drum household washing machines and multi-drum household washer-dryers, the provisions of points 1 to 6 and 9(2) of Annex II, following the measurement and calculation methods set out in Annex III, shall apply to any drum. The provisions of points 7, 8, 9(1) and 9(3) of Annex II, apply to all multi-drum household washing machines and all multi-drum household washer-dryers.

The provisions of points 1 to 6 and 9(2) of Annex II, shall apply to each of the drums independently, except when the drums are built in the same casing and can, in the eco 40-60 programme or in the wash and dry cycle, only operate simultaneously. In the latter case, these provisions shall apply to the multi-drum household washing machine or to the multi-drum household washer-dryer as a whole, as follows:

- (a) the rated washing capacity is the sum of the rated washing capacities of each drum; for multi-drum household washer-dryers, the rated capacity is the sum of the rated capacities of each drum;
- (b) the energy and water consumption of the multi-drum household washing machine and of the washing cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum;
- (c) the energy and water consumption of the complete cycle of the multi-drum household washer-dryer is the sum of the energy consumption, or water consumption, of each drum;
- (d) the Energy Efficiency Index (EEI<sub>W</sub>) is calculated using the rated washing capacity and energy consumption; for multidrum household washer-dryers, the Energy Efficiency Index (EEI<sub>WD</sub>) is calculated using the rated capacity and energy consumption;
- (e) each drum shall comply individually with the minimum washing efficiency and the minimum rinsing effectiveness requirements;
- (f) each drum shall comply individually with the requirement on duration applicable to the drum with the largest rated capacity;
- (g) the requirements on low power modes apply to the whole household washing machine or the whole household washer-dryer;
- (h) the residual moisture content after washing is calculated as the weighted average, according to each drum's rated capacity;
- (i) for household multi-drum washer-dryers, the requirement on final moisture content after drying applies individually to each drum.

The verification procedure set out in Annex IV applies to the multi-drum household washing machine and to the multidrum household washer-dryer as a whole, with the verification tolerances applying to each of the parameters determined in application of this annex.

## COMMISSION REGULATION (EU) 2019/2024

## of 1 October 2019

# laying down ecodesign requirements for refrigerating appliances with a direct sales function pursuant to Directive 2009/125/EC of the European Parliament and of the Council

## (Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to Article 114 of the Treaty on the Functioning of the European Union,

Having regard to Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products (1), and in particular point 1 of Article 15 thereof,

Whereas:

- (1) Pursuant to Directive 2009/125/EC the Commission should set ecodesign requirements for energy-related products which account for significant volumes of sales and trade in the Union and which have a significant environmental impact and presenting significant potential for improvement through design in terms of their environmental impact, without entailing excessive costs.
- (2) The Communication from the Commission COM(2016) 773 (<sup>2</sup>) (ecodesign working plan) established by the Commission in application of point 1 of Article 16 of Directive 2009/125/EC sets out the working priorities under the ecodesign and energy labelling framework for the period 2016-2019. Refrigerating appliances with a direct sales function are among the energy-related product groups to be considered as priorities for the undertaking of preparatory studies and eventual adoption of measures.
- (3) Measures from the ecodesign working plan have an estimated potential to deliver a total in excess of 260 TWh of annual final energy savings in 2030, which is equivalent to reducing greenhouse gas emissions by approximately 100 million tonnes per year in 2030. Refrigerating appliances with a direct sales function is one of the product groups listed in the Working Plan, with an estimated 48 TWh of annual final energy savings in 2030.
- (4) The Commission has carried out two preparatory studies covering the technical, environmental and economic characteristics of refrigerating appliances with a direct sales function typically used in the Union. The studies were carried out in close cooperation with stakeholders and interested parties from the Union and third countries. The results of the studies were made public and presented to the Consultation Forum established by Article 18 of Directive 2009/125/EC.
- (5) This Regulation should apply to the following refrigerating appliances with a direct sales function: supermarket refrigerating (freezer or refrigerator) cabinets, beverage coolers, ice-cream freezers, gelato-scooping cabinets and refrigerated vending machines.
- (6) The environmental aspect of refrigerating appliances with a direct sales function that has been identified as most significant for the purposes of this Regulation is energy consumption in the use phase. This energy consumption could be reduced, without increasing the combined costs of purchasing and operating these products, using costeffective non-proprietary technologies. Direct emissions from refrigerants and the availability of spare parts were also identified as relevant.
- (7) As refrigerants are subject to Regulation (EU) No 517/2014 of the European Parliament and of the Council (<sup>3</sup>), no specific requirements on refrigerants are set in this Regulation. Furthermore, an increasing use of low global warming potential refrigerants in the last decade in the Union market indicates that the manufacturers are already undertaking a gradual substitution towards refrigerants with reduced impact on the environment, without the need of additional policy intervention by means of ecodesign.

<sup>&</sup>lt;sup>(1)</sup> OJ L 285, 31.10.2009, p. 10.

<sup>(&</sup>lt;sup>2</sup>) Communication from the Commission. Ecodesign working plan 2016-2019, COM(2016) 773 final, 30.11.2016.

<sup>(&</sup>lt;sup>2</sup>) Regulation (EC) No 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing (EC) No 842/2006 (OJ L 150, 20.5.2014, p. 195).

(8) The annual energy consumption of products subject to this Regulation in the Union was estimated at 65 TWh in 2015, corresponding to 26 million tonnes of  $CO_2$  equivalent. The energy consumption of refrigerating appliances with a direct sales function in a business-as-usual scenario is projected to decrease by 2030. However, this decrease is expected to slow down unless ecodesign requirements are set.

(9) Minibars and wine storage appliances with sales functions should not be considered refrigerating appliances with direct sales functions and therefore should be excluded from this Regulation, they are in the scope of Commission Regulation (EU) 2019/2019 (<sup>4</sup>).

- (10) Vertical static-air cabinets are professional refrigerating appliances and are defined in Commission Regulation (EU) 2015/1095 <sup>(5)</sup>, and therefore should be excluded from this Regulation.
- (11) This Regulation applies to products with varying technical characteristics and functionalities. For this reason energy efficiency requirements are set according to the functionality of the appliances. In this functionality approach, a minimum breakdown of refrigerating appliances with a direct sales function categories is proposed, this will bring clear signals to the markets about more/less energy efficient refrigerating appliances with a direct sales function types with the same function. Inefficient refrigerating appliances with a direct sales function types will have more difficulties to reach a certain energy labelling class or may even not meet the minimum energy requirements.
- (12) The Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM(2015) 614 final <sup>(6)</sup> (circular economy action plan) and the ecodesign working plan underline the importance of using the ecodesign framework to support the move towards a more resource efficient and circular economy. Directive 2012/19/EU of the European Parliament and the Council <sup>(7)</sup> refers to Directive 2009/125/EC and indicates that ecodesign requirements should facilitate the re-use, dismantling and recovery of waste electrical and electronic equipment (WEEE) by tackling the issues upstream. This Regulation should therefore lay down appropriate requirements for this.
- (13) The relevant product parameters should be measured using reliable, accurate and reproducible methods. Those methods should take into account recognised state-of-the-art measurement methods including, where available, harmonised standards adopted by the European standardisation bodies, as listed in Annex I to Regulation (EU) No 1025/2012 of the European Parliament and of the Council (<sup>8</sup>).
- (14) In accordance with Article 8 of Directive 2009/125/EC, this Regulation should specify the applicable conformity assessment procedures.
- (15) To facilitate compliance checks, manufacturers, importers or authorised representatives should provide information in the technical documentation referred to in Annexes IV and V to Directive 2009/125/EC in so far as that information relates to the requirements laid down in this Regulation.
- (16) For market surveillance purposes, manufacturers should be allowed to refer to the product database if the technical documentation as per Commission Delegated Regulation (EU) 2019/2018 (<sup>9</sup>) contains the same information.

<sup>(4)</sup> Commission Regulation (EU) 2019/2019 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 643/2009 (see page 187 of this Official Journal).

<sup>(&</sup>lt;sup>5</sup>) Commission Regulation (EU) 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers (OJ L 177, 8.7.2015, p. 19).

<sup>(&</sup>lt;sup>6</sup>) Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Closing The Loop — An EU action Plan for the circular economy, COM(2015) 614 final, 2.12.2015.

<sup>(7)</sup> Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE) (OJ L 197, 24.7.2012, p. 38).

<sup>(8)</sup> Regulation (EU) No 1025/2012 of the European Parliament and of the Council of 25 October 2012 on European standardisation, amending Council Directives 89/686/EEC and 93/15/EEC and Directives 94/9/EC, 94/25/EC, 95/16/EC, 97/23/EC, 98/34/EC, 2004/22/EC, 2007/23/EC, 2009/23/EC and 2009/105/EC of the European Parliament and of the Council and repealing Council Decision 87/95/EEC and Decision No 1673/2006/EC of the European Parliament and of the Council (OJ L 316, 14.11.2012, p. 12).

<sup>(&</sup>lt;sup>9</sup>) Commission Delegated Regulation (EU) 2019/2018 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances with a direct sales function (see page 155 of this Official Journal).

- (17) To improve the effectiveness of this Regulation and to protect consumers, products that automatically alter their performance in test conditions to improve the declared parameters should be prohibited.
- (18) In addition to the legally binding requirements laid down in this Regulation, benchmarks for best available technologies should be identified to make information on the products' environmental performance over their lifecycle subject to this Regulation widely available and easily accessible, in accordance with Directive 2009/125/EC, point 3(2) of Annex I.
- (19) A review of this Regulation should assess the appropriateness and effectiveness of its provisions in achieving its goals. The timing of the review should allow for all provisions to be implemented.
- (20) The measures provided for in this Regulation are in accordance with the opinion of the Committee established by point 1 of Article 19 of Directive 2009/125/EC,

HAS ADOPTED THIS REGULATION:

### Article 1

# Subject matter and scope

1. This Regulation establishes ecodesign requirements for the placing on the market or the putting into service of electric mains-operated refrigerating appliances with a direct sales function, including appliances sold for refrigeration of items other than foodstuffs.

- 2. This Regulation does not apply to:
- (a) refrigerating appliances with a direct sales function that are only powered by energy sources other than electricity;
- (b) the remote components, such as the condensing unit, compressors or water condensed unit, to which a remote cabinet needs to be connected in order to function;
- (c) food processing refrigerating appliances with a direct sales function;
- (d) refrigerating appliances with a direct sales function specifically tested and approved for the storage of medicines or scientific samples;
- (e) refrigerating appliances with a direct sales function that have no integrated system for producing cooling, and function by ducting chilled air that is produced by an external air chiller unit; this does not include remote cabinets nor does it include category 6 refrigerated vending machines, as defined in Table 5 of Annex III;
- (f) professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers as defined in Regulation (EU) 2015/1095;
- (g) wine storage appliances and minibars.
- 3. The requirements in point 1 and point 3(k) of Annex II do not apply to:
- (a) refrigerating appliances with a direct sales function that do not use a vapour compression refrigeration cycle;
- (b) refrigerating appliances with a direct sales function for the sale and display of live foodstuffs, such as refrigerating appliances for the sale and display of living fish and shellfish, refrigerated aquaria and water tanks;
- (c) saladettes;
- (d) horizontal serve-over counters with integrated storage designed to work at chilled operating temperatures;
- (e) corner cabinets;

- (f) vending machines designed to work at frozen operating temperatures;
- (g) serve-over fish counters with flaked ice.

# Article 2

# Definitions

For the purpose of this Regulation, the following definitions shall apply:

- 'refrigerating appliance with a direct sales function' means an insulated cabinet with one or more compartments that are controlled at specific temperatures, cooled by natural or forced convection through one or more energy consuming means and is intended for displaying and selling, with or without assisted serving, foodstuffs and other items at specified temperatures below the ambient temperature to customers, accessible directly through open sides or through one or more doors, or drawers or both, including refrigerating appliances with a direct sales function with areas used for storage of foodstuffs and other items not accessible by customers, and excluding minibars and wine storage appliances;
- 2. 'foodstuffs' means food, ingredients, beverages, including wine, and other items primarily used for consumption which require refrigeration at specified temperatures;
- 'condensing unit' means a product integrating at least one electrically driven compressor and one condenser, capable of cooling down and continuously maintaining low or medium temperature inside a refrigerated appliance or system, using a vapour compression cycle once connected to an evaporator and an expansion device, as defined in Regulation (EU) 2015/1095;
- 4. 'remote cabinet' means a refrigerating appliance with a direct sales function which consists of a factory-made assembly of components that in order to function as a refrigerating appliance with a direct sales function, needs to be connected additionally to remote components (condensing unit and/or compressor and/or water condensed unit) which are not an integral part of the cabinet;
- 5. 'food processing refrigerating appliance with a direct sales function' means a refrigerating appliance with a direct sales function specifically tested and approved for carrying out food processing such as ice-cream makers, microwave-equipped refrigerated vending machines or ice makers; this does not include refrigerating appliances with a direct sales function equipped with one compartment specifically designed for carrying out food processing which is equivalent to less than 20 % of the appliance total net volume;
- 6. 'net volume' means the part of the gross volume of any compartment which is left after deduction of the volume of components and spaces unusable for the storage or display of foodstuffs and other items, in cubic decimetres (dm<sup>3</sup>) or litres (L);
- 7. 'gross volume' means the volume within the inside liners of the compartment, without internal fittings and with door or lid closed, in cubic decimetres (dm<sup>3</sup>) or litres (L);
- 8. 'specifically tested and approved' means that the product complies with all the following requirements:
  - (a) it has been specifically designed and tested for the mentioned operating condition or application, according to the Union legislation mentioned or related acts, relevant Member State legislation, and/or relevant European or international standards;
  - (b) it is accompanied by evidence, to be included in the technical documentation in the form of a certificate, a type approval mark or a test report, that the product has been specifically approved for the mentioned operating condition or application;
  - (c) it is placed on the market specifically for the mentioned operating condition or application, as evidenced at least by the technical documentation, information provided for the product and any advertising, information or marketing materials;
- 9. 'wine storage appliance' means refrigerating appliance with only one type of compartment for the storage of wine, with precision temperature control for the storage conditions and target temperature, and equipped with anti-vibration measures, as defined in Regulation (EU) 2019/2019;

- 10. 'compartment' means an enclosed space within a refrigerating appliance with a direct sales function, separated from other compartment(s) by a partition, container, or similar construction, which is directly accessible through one or more external doors and may itself be divided into sub-compartments. For the purpose of this Regulation, unless specified otherwise, compartment refers to both compartments and sub-compartments;
- 11. 'external door' is the part of a refrigerating appliance with a direct sales function that can be moved or removed to at least allow inserting the load from the exterior to the interior or extracting the load from the interior to the exterior of the refrigerating appliance with a direct sales function;
- 12. 'sub-compartment' means an enclosed space in a compartment having a different operating temperature range from the compartment in which it is located;
- 13. 'minibar' means a refrigerating appliance with a total volume of maximum 60 litres, which is primary intended for the storage and sales of foodstuffs in hotel rooms and similar premises, as defined in Regulation (EU) 2019/2019;
- 14. 'refrigerated drum vending machine' means a refrigerated vending machine with rotating drums each divided in partitions, in which the foodstuffs and other items are placed on a horizontal surface, and are retrieved through individual delivery doors;
- 15. 'refrigerated vending machine' means a refrigerating appliance with a direct sales function designed to accept consumer payments or tokens to dispense chilled foodstuffs or other items without on-site labour intervention;
- 16. 'saladette' means a refrigerating appliance with a direct sales function with one or more doors or drawer fronts in the vertical plane that has cut-outs in the top surface into which temporary storage bins can be inserted for easy-access storage of foodstuffs such as pizza toppings or salad items;
- 17. 'horizontal serve-over counter with integrated storage' means a horizontal cabinet for assisted service, which includes refrigerated storage which is of at least 100 litres (L) per meter (m) length and which is normally placed at the serve-over counter's base;
- 18. 'horizontal cabinet' means a refrigerating appliance with a direct sales function with horizontal display, opening on its top, and accessible from above;
- 19. 'chilled operating temperature' means a temperature between -3,5 degrees Celsius (°C) and 15 degrees Celsius (°C) for appliances equipped with energy management systems for saving energy and between -3,5 degrees Celsius (°C) and 10 degrees Celsius (°C) for appliances not equipped with energy management systems for saving energy;
- 20. 'operating temperature' means the reference temperature inside a compartment during testing;
- 21. 'corner cabinet' means a refrigerating appliance with a direct sales function used to achieve geometrical continuity between two linear cabinets that are at an angle to each other and/or that form a curve. A corner cabinet does not have a recognisable longitudinal axis or length since it consists only of a filling shape (wedge or similar) and is not designed to function as a stand-alone refrigerated unit. The two ends of the corner cabinet are inclined at an angle between 30° and 90°;
- 22. 'frozen operating temperature' means a temperature below -12 degrees Celsius (°C);
- 23. 'serve-over fish counter with flaked ice' means a cabinet for horizontal assisted service, designed and marketed specifically for fresh fish display. It is characterised by having on its top a bed of flaked ice used to maintain the temperature of the displayed fresh fish, and it also has a built in drain outlet;
- 24. 'equivalent model' means a model which has the same technical characteristics relevant for the technical information to be provided, but which is placed on the market or put into service by the same manufacturer, importer or authorised representative as another model with a different model identifier;
- 25. 'model identifier' means the code, usually alphanumeric, which distinguishes a specific product model from other models with the same trade mark or the same manufacturer's, importer's or authorised representative's name;

- 26. 'product database' means a collection of data concerning products, which is arranged in a systematic manner and consists of a consumer-oriented public part, where information concerning individual product parameters is accessible by electronic means, an online portal for accessibility and a compliance part, with clearly specified accessibility and security requirements, as referred to in Regulation (EU) 2017/1369 of the European Parliament and of the Council (<sup>10</sup>);
- 27. 'beverage cooler' means a refrigerating appliance with a direct sales function designed to cool, at a specified speed, packaged non-perishable beverages, excluding wine, loaded at ambient temperature, for sale at specified temperatures below the ambient temperature. A beverage cooler allows accessing the beverages directly through open sides or through one or more doors, drawers or both. The temperature inside the cooler may increase during periods of no demand, for the purpose of energy saving, in view of the non-perishable nature of beverages;
- 28. 'energy efficiency index' (EEI) means an index number for the relative energy efficiency of a refrigeration appliance with a direct sales function expressed in percentage, calculated in accordance with point 2 of Annex III.

For the purposes of the Annexes, additional definitions are set out in Annex I.

## Article 3

## **Ecodesign requirements**

The ecodesign requirements set out in Annex II shall apply from the dates indicated therein.

## Article 4

## Conformity assessment

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control system set out in Annex IV to that Directive or the management system set out in Annex V to that Directive.

2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain a copy of the product information provided in accordance with point 3 of Annex II and the details and the results of the calculations set out in Annex III to this Regulation.

- 3. Where the information included in the technical documentation for a particular model has been obtained:
- (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer; or
- (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer; or both,

the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.

4. The technical documentation shall include the information in the order and as set out in Annex VI of Delegated Regulation (EU) 2019/2018. Except for products referred to in point 3 of Article 1, for market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to Annex IV, point 2(g) of Directive 2009/125/EC, refer to the technical documentation uploaded to the product database which contains the same information laid down in Delegated Regulation (EU) 2019/2018.

# Article 5

### Verification procedure for market surveillance purposes

Member States shall apply the verification procedure set out in Annex IV when performing the market surveillance checks referred to in point 2 of Article 3 of Directive 2009/125/EC.

<sup>(&</sup>lt;sup>10</sup>) Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1).

# Article 6

#### **Circumvention and software updates**

The manufacturer, importer or authorised representative shall not place on the market products designed to be able to detect they are being tested (e.g. recognising the test conditions or test cycle), and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any of the documentation provided.

The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update when measured with the same test standard originally used for the declaration of conformity, except with explicit consent of the end-user prior to update. No performance change shall occur as a result of rejecting the update.

A software update shall never have the effect of changing the product's performance in a way that makes it non-compliant with the ecodesign requirements applicable for the declaration of conformity.

## Article 7

## Benchmarks

The benchmarks for the best-performing products and technologies available on the market at the time of adopting this Regulation are set out in Annex V.

# Article 8

### Review

The Commission shall review this Regulation in the light of technological progress and present the results of this assessment, including, if appropriate, a draft revision proposal, to the Consultation Forum no later than 25 December 2023.

This review shall among other matters assess:

- (a) the level of energy efficiency index requirements;
- (b) the appropriateness of modifying the EEI formula, including the modelling parameters and the correction factors;
- (c) the appropriateness of further segmentation of the product categories;
- (d) the appropriateness to set additional resource efficiency requirements in accordance with the objectives of the circular economy, including whether more spare parts should be included;
- (e) the appropriateness to set energy efficiency requirements and additional information requirements for saladettes, horizontal serve-over counters with integrated storage working at chilled operating temperatures, corner cabinets, vending machines designed to work at a frozen operating temperature and serve-over fish counters with flaked ice;
- (f) the appropriateness to base the [equivalent volume] of a beverage cooler on the net volume instead of the gross volume;
- (g) the appropriateness to introduce an EEI formula for supermarket cabinets based on the net volume instead of total display area;
- (h) the level of the tolerances.

# Article 9

# Entry into force and application

This Regulation shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Union.

It shall apply from 1 March 2021.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, 1 October 2019.

For the Commission The President Jean-Claude JUNCKER

### ANNEX I

#### Definitions applicable for the Annexes

The following definitions shall apply:

- (1) 'spare part' means a separate part that can replace a part with the same or similar function in a product;
- (2) 'professional repairer' means an operator or undertaking which provides services of repair and professional maintenance of refrigerating appliances with a direct sales function;
- (3) 'door gasket' means a mechanical seal which fills the space between the door and the cabinet of the refrigerating appliance with a direct sales function to prevent leakage from the cabinet to the outdoor air;
- (4) 'vacuum insulation panel' (VIP) means an insulation panel consisting of a firm, highly-porous material encased in a thin, gas-tight outer envelope, from which the gases are evacuated and which is sealed to prevent outside gases from entering the panel;
- (5) 'ice-cream freezer' means a horizontal cabinet intended to store and/or display and sell pre-packed ice cream, where access by the consumer to the pre-packed ice cream is achieved by opening a non-transparent or transparent lid from the top, with a net volume  $\leq 600$  litres (L) and, only in the case of transparent lid ice-cream freezers, a net volume divided by the total display area  $\geq 0.35$  meters (m);
- (6) 'transparent lid' means a door made of a transparent material that covers at least 75 % of the door surface and that allows the end-user to see items through it;
- (7) 'total display area' (TDA) means the total visible foodstuffs and other items area, including visible area through glazing, defined by the sum of horizontal and vertical projected surface areas of the net volume, expressed in square meters (m<sup>2</sup>);
- (8) 'guarantee' means any undertaking by the retailer or a manufacturer, importer or authorised representative to the consumer, to:
  - (a) reimburse the price paid; or
  - (b) replace, repair or handle refrigerating appliances with a direct sales function in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising;
- (9) 'gelato-scooping cabinet' means a refrigerating appliance with a direct sales function in which ice-cream can be stored, displayed and scooped, within prescribed temperature limits as set out in Annex III, Table 5;
- (10) 'annual energy consumption' (*AE*) means the average daily energy consumption multiplied by 365 (days per year), expressed in kilowatt hour per year (kWh/a), calculated in accordance with point 2(b) of Annex III;
- (11) 'daily energy consumption' ( $E_{daily}$ ) means the energy used by a refrigerating appliance with a direct sales function over 24 hours at reference conditions, expressed in kilowatt hour per day (kWh/24h);
- (12) 'standard annual energy consumption' (SAE) means the reference annual energy consumption of a refrigeration appliance with a direct sales function, expressed in kilowatt hour per year (kWh/a), calculated in accordance with point 2(c) of Annex III;
- (13) 'M' and 'N' means modelling parameters that take into account the total display area or volume-dependence of the energy use, with values as set out in Table 4, Annex III;
- (14) 'temperature coefficient' (C) means a correction factor that accounts for the difference in operating temperature;
- (15) 'climate class factor' (CC) means a correction factor that accounts for the difference in ambient conditions for which the refrigerating appliance is designed for;

- (16) 'P' means a correction factor that accounts for the differences between integral and remote cabinets;
- (17) 'integral cabinet' means a refrigerating appliance with a direct sales function that has an integrated refrigeration system which incorporates a compressor and condensing unit;
- (18) 'refrigerator' means a refrigerating appliance with a direct sales function that continuously maintains the temperature of the products stored in the cabinet at chilled operating temperature;
- (19) 'freezer' means a refrigerating appliance with a direct sales function that continuously maintains the temperature of the products stored in the cabinet at frozen operating temperature;
- (20) 'vertical cabinet' means a refrigerating appliance with a direct sales function with a vertical or inclined display opening from the front;
- (21) 'combined cabinet' means a refrigerating appliance with a direct sales function which combines display and opening directions from a vertical and a horizontal cabinet;
- (22) 'supermarket cabinet' means a refrigerating appliance with a direct sales function intended for the sale and display of foodstuffs and other items in retail applications, such as in supermarkets. Beverage coolers, refrigerated vending machines, gelato-scooping cabinets and ice-cream freezers are not considered supermarket cabinets;
- (23) 'roll-in cabinet' means a supermarket cabinet which enables goods to be displayed directly on their pallets or rolls which can be placed inside by lifting, swinging, or removing the lower front part, where fitted;
- (24) 'M-package' means a test package fitted with a temperature measuring device;
- (25) 'multi-temperature vending machine' means a refrigerated vending machine including at least two compartments with different operating temperatures.
#### ANNEX II

#### **Ecodesign requirements**

- 1. Energy efficiency requirements:
- (a) From 1 March 2021, the EEI of refrigerating appliances with a direct sales function shall not be above the values as set out in Table 1.

#### Table 1

# Maximum EEI for refrigerating appliances with a direct sales function, expressed in %

|                                                                 | EEI |
|-----------------------------------------------------------------|-----|
| Ice-cream freezers                                              | 80  |
| All other refrigerating appliances with a direct sales function | 100 |

(b) From 1 September 2023, the EEI of refrigerating appliances with a direct sales function, except for refrigerated drum vending machines, shall not be above the values as set out in Table 2.

Table 2

# Maximum EEI for refrigerating appliances with a direct sales function, expressed in %

|                                                                                                                 | EEI |
|-----------------------------------------------------------------------------------------------------------------|-----|
| Ice-cream freezers                                                                                              | 50  |
| All other refrigerating appliances with a direct sales function, except refrigerated drum vend-<br>ing machines | 80  |

#### 2. Resource efficiency requirements:

From 1 March 2021, refrigerating appliances with a direct sales function shall meet the following requirements:

#### (a) Availability of spare parts

- (1) Manufacturers, importers or authorised representatives of refrigerating appliances with a direct sales function shall make available to professional repairers at least the following spare parts:
  - thermostats;
  - starting relays;
  - no-frost heating resistors;
  - temperature sensors;
  - software and firmware including reset software;
  - printed circuit boards; and
  - light sources;
  - for a minimum period of eight years after placing the last unit of the model on the market.
- (2) Manufacturers, importers or authorised representatives of refrigerating appliances with a direct sales function shall make available to professional repairers and end-users at least the following spare parts:
  - door handles and door hinges;
  - knobs, dials and buttons;

- door gaskets; and
- peripheral trays, baskets and racks for storage;

for a minimum period of eight years after placing the last unit of the model on the market.

- (3) Manufacturers, importers or authorised representatives of refrigerating appliances with a direct sales function shall ensure that the spare parts mentioned in points (1) and (2) can be replaced with the use of commonly available tools and without permanent damage to the appliance.
- (4) The list of spare parts concerned by point (1) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.
- (5) The list of spare parts concerned by point (2) and the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.
- (b) Maximum delivery time of spare parts

During the period mentioned under point (a), the manufacturer, importer or authorised representatives shall ensure the delivery of the spare parts for refrigerating appliances with a direct sales function within 15 working days after having received the order.

In the case of spare parts available concerned by point a(1) the availability of the spare parts may be limited to professional repairers registered in accordance with point c(1) and (2).

(c) Access to repair and maintenance information

After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, and until the end of the period mentioned under (a), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:

- (1) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers, importers or authorised representative may require the professional repairer to demonstrate that:
  - (i) the professional repairer has the technical competence to repair refrigerating appliances with a direct sales function and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
  - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity regardless of whether this is required by the Member State.
- (2) the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of the request;
- (3) manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information.

Once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The information may be provided for an equivalent model or model of the same family, if relevant.

The available repair and maintenance information shall include:

<sup>—</sup> the unequivocal appliance identification;

- a disassembly map or exploded view;
- technical manual of instructions for repair;
- list of necessary repair and test equipment;
- component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- wiring and connection diagrams;
- diagnostic fault and error codes (including manufacturer-specific codes, where applicable);
- instructions for installation of relevant software and firmware including reset software; and
- information on how to access data records of reported failure incidents stored on the refrigerating appliance with a direct sales function (where applicable).
- (d) Requirements for dismantling for material recovery and recycling while avoiding pollution
  - (1) Manufacturers, importers or authorised representatives shall ensure that refrigerating appliances with a direct sales function are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed with the use of commonly available tools.
  - (2) Manufacturers, importers and authorised representatives shall fulfil the obligations laid down in point 1 of Article 15 of Directive 2012/19/EU.
  - (3) If the refrigerating appliances with a direct sales function contains vacuum insulation panels, the refrigerating appliance with a direct sales function shall be labelled with the letters 'VIP'.
- 3. Information requirements:

From 1 March 2021, instruction manuals for installers and end-users, and free access websites of manufacturers, importers and authorised representatives shall include the following information:

- (a) the recommended setting of temperatures in each compartment for optimum food preservation;
- (b) an estimation of the impact of temperature settings on food waste;
- (c) for beverage coolers: 'This appliance is intended to operate in climates where the maximum temperature and the humidity are [fill in the applicable warmest temperature of the beverage cooler and the applicable relative humidity of the beverage cooler of Table 7] respectively.';
- (d) for ice-cream freezers: 'This appliance is intended to operate in climates where the temperature and the humidity ranges from [fill in the applicable minimum temperature of Table 9] to [fill in the applicable maximum temperature of Table 9] and from [fill in the applicable minimum relative humidity of Table 9] to [fill in the applicable maximum relative humidity of Table 9] respectively.';
- (e) instructions for the correct installation and end-user maintenance, including cleaning, of the refrigerating appliance with a direct sales function;
- (f) for integral cabinets: 'If the condenser coil is not cleaned [the recommended frequency for cleaning the condenser coil, expressed in times per year], the efficiency of the appliance will decrease significantly.';
- (g) access to professional repair such as internet webpages, addresses, contact details;

- (h) relevant information for ordering spare parts, directly or through other channels provided by the manufacturer, importer or authorised representative such as internet webpages, addresses, contact details;
- (i) the minimum period during which spare parts, necessary for the repair of the refrigerating appliance with a direct sales function, are available;
- (j) the minimum duration of the guarantee of the refrigerating appliance with a direct sales function offered by the manufacturer, importer or authorised representative;
- (k) instructions on how to find the model information in the product database, as set out in Delegated Regulation (EU) 2019/2018 by means of a weblink that links the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.

#### ANNEX III

#### Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods and are in line with the following provisions set out below. The reference numbers of these harmonised standards have been published for this purpose in the *Official Journal* of the European Union.

- 1. General conditions for testing:
- (a) the ambient conditions shall correspond to Set 1, except for ice-cream freezers and gelato-scooping cabinets which shall be tested in ambient conditions corresponding to Set 2, as set out in Table 3;
- (b) where a compartment can be set to different temperatures, it shall be tested at the lowest operating temperature;
- (c) refrigerated vending machines with compartments with variable volumes shall be tested with the net volume of the compartment with the highest operating temperature adjusted to its minimum net volume;
- (d) for beverage coolers, the specified cooling speed shall be according to the half reload recovery time.

#### Table 3

#### Ambient conditions

|       | Dry bulb temperature,<br>°C | Relative humidity, % | Dew point, °C | Water vapour mass in<br>dry air, g/kg |
|-------|-----------------------------|----------------------|---------------|---------------------------------------|
| Set 1 | 25                          | 60                   | 16,7          | 12,0                                  |
| Set 2 | 30                          | 55                   | 20,0          | 14,8                                  |

2. Determination of the EEI:

(a) For all refrigerating appliances with a direct sales function, the EEI, expressed in % and rounded to the first decimal place, is the ratio of the AE (in kWh/a) and the reference SAE (in kWh/a) and is calculated as:

EEI = AE/SAE.

(b) The AE, expressed in kWh/a and rounded to two decimal places, is calculated as follows:

$$AE = 365 \times E_{daily};$$

with:

- $E_{daily}$  is the energy consumption of the refrigerating appliance with a direct sales function over 24 hours, expressed in kWh/24h and rounded to three decimal places.
- (c) The SAE is expressed in kWh/a and rounded to two decimal places. For refrigerating appliances with a direct sales function with all compartments having the same temperature class and for refrigerated vending machines, the SAE is calculated as follows:

$$SAE = 365 \times P \times (M + N \times Y) \times C.$$

For refrigerating appliances with a direct sales function with more than one compartment having different temperature classes, with the exception of refrigerated vending machines, the *SAE* is calculated as follows:

$$SAE = 365 \times P \times \sum_{c=1}^{n} (M + N \times Y_c) \times C_c$$

where:

(1) c is the index number for a compartment type ranging from 1 to n, with n being the total number of compartment types.

(2) The values of M and N are given in Table 4.

|                                                         |             | 1           |
|---------------------------------------------------------|-------------|-------------|
| Category                                                | Value for M | Value for N |
| Beverage coolers                                        | 2,1         | 0,006       |
| Ice-cream freezers                                      | 2,0         | 0,009       |
| Refrigerated vending machines                           | 4,1         | 0,004       |
| Gelato-scooping cabinets                                | 25,0        | 30,400      |
| Vertical and combined supermarket refrigerator cabinets | 9,1         | 9,100       |
| Horizontal supermarket refrigerator cabinets            | 3,7         | 3,500       |
| Vertical and combined supermarket freezer cabinets      | 7,5         | 19,300      |
| Horizontal supermarket freezer cabinets                 | 4,0         | 10,300      |
| Roll-in cabinets (from 1 March 2021)                    | 9,2         | 11,600      |
| Roll-in cabinets (from 1 September 2023)                | 9,1         | 9,100       |

Table 4 M and N values

(3) The values of C, the temperature coefficient, are given in Table 5.

Table 5

# Temperature conditions and corresponding temperature coefficient values, C

| (a) Supermarket cabinets                          |                      |                                                        |                                                       |                                                                |             |
|---------------------------------------------------|----------------------|--------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------|-------------|
| Category                                          | Temperature<br>class | Highest<br>temperature of<br>warmest<br>M-package (°C) | Lowest<br>temperature of<br>coldest<br>M-package (°C) | Highest<br>minimum<br>temperature of<br>all M-packages<br>(°C) | Value for C |
| Vertical and combined super-                      | M2                   | ≤ +7                                                   | ≥ -1                                                  | n.a.                                                           | 1,00        |
| market reirigerator cabinets                      | H1 and H2            | ≤ +10                                                  | ≥ -1                                                  | n.a.                                                           | 0,82        |
|                                                   | M1                   | ≤ +5                                                   | ≥ -1                                                  | n.a.                                                           | 1,15        |
| Horizontal supermarket refriger-<br>ator cabinets | M2                   | ≤ +7                                                   | ≥ -1                                                  | n.a.                                                           | 1,00        |
|                                                   | H1 and H2            | ≤ +10                                                  | ≥ -1                                                  | n.a.                                                           | 0,92        |
|                                                   | M1                   | ≤ +5                                                   | ≥ -1                                                  | n.a.                                                           | 1,08        |
| Vertical and combined super-                      | L1                   | ≤ -15                                                  | n.a.                                                  | ≤ -18                                                          | 1,00        |
| market freezer cabinets                           | L2                   | ≤ -12                                                  | n.a.                                                  | ≤ -18                                                          | 0,90        |
|                                                   | L3                   | ≤ -12                                                  | n.a.                                                  | ≤ -15                                                          | 0,90        |
| Horizontal supermarket freezer<br>cabinets        | L1                   | ≤ -15                                                  | n.a.                                                  | ≤ -18                                                          | 1,00        |
|                                                   | L2                   | ≤ -12                                                  | n.a.                                                  | ≤ -18                                                          | 0,92        |
|                                                   | L3                   | ≤ -12                                                  | n.a.                                                  | ≤ -15                                                          | 0,92        |

# (a) Supermarket cabinets

| Temperature class | Highest temperature of<br>warmest M-package (°C) | Lowest temperature of coldest M-package (°C) | Highest minimum<br>temperature of all M-package<br>(°C) | Value for C |
|-------------------|--------------------------------------------------|----------------------------------------------|---------------------------------------------------------|-------------|
| G1                | -10                                              | -14                                          | n.a.                                                    | 1,00        |
| G2                | -10                                              | -16                                          | n.a.                                                    | 1,00        |
| G3                | -10                                              | -18                                          | n.a.                                                    | 1,00        |
| L1                | -15                                              | n.a.                                         | -18                                                     | 1,00        |
| L2                | -12                                              | n.a.                                         | -18                                                     | 1,00        |
| L3                | -12                                              | n.a.                                         | -15                                                     | 1,00        |
| S                 |                                                  | Special classification                       | -                                                       | 1,00        |

#### (b) Gelato-scooping cabinets

# (c) Refrigerated vending machines

| Temperature class (**) | Maximum measured product temperature $(T_V)$ (°C) | Value for C     |
|------------------------|---------------------------------------------------|-----------------|
| Category 1             | 7                                                 |                 |
| Category 2             | 12                                                |                 |
| Category 3             | 3                                                 | $1+(12-T_v)/25$ |
| Category 4             | (T <sub>V1</sub> +T <sub>V2</sub> )/2 (*)         |                 |
| Category 6             | (T <sub>V1</sub> +T <sub>V2</sub> )/2 (*)         |                 |

# (d) other refrigerating appliances with a direct sales function

| Category         | Value for C |
|------------------|-------------|
| Other appliances | 1,00        |

Notes:

- (\*) For multi-temperature vending machines,  $T_V$  shall be the average of  $T_{V1}$  (the maximum measured product temperature in the warmest compartment) and  $T_{V2}$  (the maximum measured product temperature in the coldest compartment).
- (\*\*) category 1 = refrigerated closed fronted can and bottle machines where the products are held in stacks, category 2 = refrigerated glass fronted can and bottle, confectionery & snack machines, category 3 = refrigerated glass fronted machines entirely for perishable foodstuffs, category 4 = refrigerated multi-temperature glass fronted machines, category 6 = combination machines consisting of different categories of machine in the same housing and powered by one chiller.
  n.a = not applicable

(4) Coefficient Y is calculated as follows:

(a) for beverage coolers:

 $Y_c$  is the equivalent volume of the compartments of the beverage cooler with target temperature *Tc*, (*Veq*<sub>0</sub>), calculated as follows:

 $Y_c = Veq_c = GrossVolume_c \times ((25 - Tc)/20) \times CC;$ 

where *Tc* is the average compartment temperature and *CC* is the climate class factor. The values for *Tc* are set out in Table 6. The values for *CC* are set out in Table 7.

| Tał | ble ( | 5 |
|-----|-------|---|
|-----|-------|---|

# Temperature classes and corresponding average compartment temperatures (Tc) for beverage coolers

| Temperature class (*) | Tc (°C) |
|-----------------------|---------|
| K1                    | +3,5    |
| К2                    | +2,5    |
| К3                    | -1,0    |
| К4                    | +5,0    |

Table 7

# Operating conditions and corresponding CC values for beverage coolers

| Warmest ambient temperature (°C) | Ambient relative humidity (%) | СС   |
|----------------------------------|-------------------------------|------|
| +25                              | 60                            | 1,00 |
| +32                              | 65                            | 1,05 |
| +40                              | 75                            | 1,10 |

(b) for ice-cream freezers:

 $Y_c$  is the equivalent volume of the compartments of the ice-cream freezer with target temperature *Tc*, (*Veq*<sub>0</sub>), calculated as follows:

$$Y_c = Veq_c = NetVolume_c \times ((12 - Tc)/30) \times CC;$$

where *Tc* is the average compartment temperature and *CC* is the climate class factor. The values for *Tc* are set out in Table 8. The values for *CC* are set out in Table 9.

#### Table 8

# Temperature classes and corresponding average compartment temperatures (Tc) for ice-cream freezers

| Tempera                                                                                            |                                                                                               |         |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|---------|
| Warmest M-package temperature<br>colder or equal to in all tests (except<br>lid opening test) (°C) | Warmest M-package maximum temper-<br>ature rise allowed during the lid open-<br>ing test (°C) | Tc (°C) |
| -18                                                                                                | 2                                                                                             | -18,0   |
| -7                                                                                                 | 2                                                                                             | -7,0    |

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#### Operating conditions and corresponding CC values for ice-cream freezers

|                                           | Minimum                     |                                     | Maximum                     |                                     |      |
|-------------------------------------------|-----------------------------|-------------------------------------|-----------------------------|-------------------------------------|------|
|                                           | Ambient<br>temperature (°C) | Ambient<br>relative<br>humidity (%) | Ambient<br>temperature (°C) | Ambient<br>relative<br>humidity (%) | СС   |
| Ice-cream freezer with<br>transparent lid | 16                          | 80                                  | 30                          | 55                                  | 1,00 |
|                                           |                             |                                     | 35                          | 75                                  | 1,10 |
|                                           |                             |                                     | 40                          | 40                                  | 1,20 |

|                                               | Minimum                     |                                     | Maximum                     |                                     |      |
|-----------------------------------------------|-----------------------------|-------------------------------------|-----------------------------|-------------------------------------|------|
|                                               | Ambient<br>temperature (°C) | Ambient<br>relative<br>humidity (%) | Ambient<br>temperature (°C) | Ambient<br>relative<br>humidity (%) | СС   |
| Ice-cream freezer with<br>non-transparent lid | 16                          | 80                                  | 30                          | 55                                  | 1,00 |
|                                               |                             |                                     | 35                          | 75                                  | 1,04 |
|                                               |                             |                                     | 40                          | 40                                  | 1,10 |

(c) for refrigerated vending machines:

Y is the net volume of the refrigerated vending machine, which is the sum of the volumes of all compartments within which the products directly available for vending are contained and the volume through which the products pass during the dispensing process, expressed in litres (L) and rounded to the nearest integer.

(d) for all other refrigerating appliances with direct sales function:

 $Y_c$  is the sum of the TDA of all compartments of the same temperature class of the refrigerating appliance with a direct sales function, expressed in square meters (m<sup>2</sup>), and rounded to two decimal places.

(5) The values for P are set out in Table 10.

# Table 10

# P values

| Cabinet type                                                | р    |
|-------------------------------------------------------------|------|
| Integral supermarket cabinets                               | 1,10 |
| Other refrigerating appliances with a direct sales function | 1,00 |

#### ANNEX IV

#### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to point 2 of Article 3 of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the following procedure:

- 1. The Member State authorities shall verify one single unit of the model.
- 2. The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to point 2 of Annex IV to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof; and
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values; and
  - (c) when the Member States authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and
  - (d) when the Member States authorities check the unit of the model, it complies with the requirements in the third paragraph of Article 6 and on resource efficiency in point 2 of Annex II; and
  - (e) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values calculated from these measurements) comply with the respective verification tolerances as given in Table 11.
- 3. If the results referred to in point 2(a), (b), (c) or (d) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 4. If the result referred to in point 2(e) is not achieved the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- 5. The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 11.
- 6. If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- 7. The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision being taken on the non-compliance of the model according to points 3 or 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex III.

The Member State authorities shall only apply the verification tolerances that are set out in Table 11 and shall use only the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 11, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

# Table 11

# Verification tolerances

| Parameters                                                  | Verification tolerances                                                                                                                   |  |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--|
| Net volume, and net compartment volume where applicable     | The determined value ( <sup>a</sup> ) shall not be more than 3 % or 1 L lower — whichever is the greater value – than the declared value. |  |
| Gross volume, and gross compartment volume where applicable | The determined value ( <sup>a</sup> ) shall not be more than 3 % or 1 L lower — whichever is the greater value – than the declared value  |  |
| TDA, and compartment TDA where applicable                   | The determined value ( <sup>a</sup> ) shall not be more than 3 % than the declared value.                                                 |  |
| $\overline{E_{daily}}$                                      | The determined value ( <sup>a</sup> ) shall not be more than 10 % higher than the declared value                                          |  |
| AE                                                          | The determined value ( <sup>a</sup> ) shall not be more than 10 % higher than the declared value.                                         |  |

(\*) in the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

# ANNEX V

# Benchmarks

At the time of entry into force of this Regulation, the best available technology on the market for refrigerating appliances with a direct sales function in terms of their EEI was identified as outlined below.

|                                                               | TDA (m <sup>2</sup> ), net volume<br>(L) or gross volume<br>(L) as applicable | $T_1$ or $T_V$ | AE (kWh/a)                  |
|---------------------------------------------------------------|-------------------------------------------------------------------------------|----------------|-----------------------------|
| Supermarket cabinets<br>(Vertical supermarket refrigerator)   | 3,3                                                                           |                | 4526<br>(= 12,4 kWh/24 h)   |
| Supermarket cabinets<br>(Horizontal supermarket refrigerator) | 2,2                                                                           |                | 2044<br>(= 5,6 kWh/24 h)    |
| Supermarket cabinets<br>(Vertical supermarket freezer)        | 3                                                                             |                | 9709<br>(= 26,6 kWh/24 h)   |
| Supermarket cabinets<br>(Horizontal supermarket freezer)      | 1,4                                                                           |                | 1621<br>(= 4,4 kWh/24 h)    |
|                                                               | 2,76                                                                          |                | 6424<br>(= 17,6 kWh/24 h)   |
| Can and bottle refrigerated vending machine                   | 548                                                                           | 7 °C           | 1547<br>(= 4,24 kWh/24 h)   |
| Spiral refrigerated vending machine                           | 472                                                                           | 3 °C           | 2070<br>(= 5,67 kWh/24 h)   |
| Beverage cooler                                               | 506                                                                           |                | 475<br>(= 1,3 kWh/24 h)     |
| Ice-cream freezer                                             | 302                                                                           |                | 329<br>(= 0,9 kWh/24 h)     |
| Gelato-scooping cabinet                                       | 1,43                                                                          |                | 10862<br>(= 29,76 kWh/24 h) |

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