

COMMISSION REGULATION (EEC) No 2281/86

of 22 July 1986

amending Regulation (EEC) No 1908/84 fixing the standard methods for determining the quality of cereals

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community,

Having regard to Council Regulation (EEC) No 2727/75 of 29 October 1975 on the common organization of the market in cereals⁽¹⁾, as last amended by Regulation (EEC) No 1579/86⁽²⁾, and in particular Articles 7 and 8 thereof,

Having regard to Council Regulation (EEC) No 2731/75 of 23 October 1975 fixing the standard qualities for common wheat, rye, barley, maize, sorghum and durum wheat⁽³⁾, as last amended by Regulation (EEC) No 1580/86⁽⁴⁾, and in particular Article 6 thereof,

Whereas, in accordance with the new policy for the cereals sector, Article 1 of Regulation (EEC) No 2731/75 lays down the technological criteria for common wheat; whereas the methods necessary for determining those criteria should therefore be laid down;

Whereas the percentage of iron in the ferric ammonium citrate used as a reagent when the level of tannins in sorghum are determined in accordance with the standard method set out in Annex III to Commission Regulation (EEC) No 1908/84⁽⁵⁾, as amended by Regulation (EEC) No 2159/84⁽⁶⁾, is excessively high; whereas, consequently, the necessary amendments should be made to the wording of section 4.4 of the said Annex, to ensure that the analyses are properly carried out;

Whereas Regulation (EEC) No 1908/84 should therefore be amended accordingly;

Whereas the measures provided for in this Regulation are in accordance with the opinion of the Management Committee for Cereals,

HAS ADOPTED THIS REGULATION:

Article 1

Regulation (EEC) No 1908/84 is hereby amended as follows:

1. Article 1 is replaced by the following:

Article 1

For the purposes of determining the quality of cereals offered for intervention under Articles 7 and 8 of Regulation (EEC) No 2727/75 and for the purposes of applying Regulation (EEC) No 2731/75, the following methods shall be used:

- the standard method for determining matter other than basic cereals of unimpaired quality shall be that set out in Annex I,
- the standard method for determining moisture content shall be that set out in Annex II,
- the standard method for determining the tannins in sorghum shall be that set out in Annex III,
- the standard method for determining the non-stickiness and machinability of the dough obtained from common wheat shall be that set out in Annex IV,
- the standard method for determining the protein content of ground common wheat shall be that recognized by the International Association for Cereal Chemistry (ICC), the standards of which are laid down under heading No 105: method for the determination of the protein content of cereals and cereal products.

However, Member States may use any other method. In such case they must furnish the Commission with evidence of recognition by the ICC that the method in question gives equivalent results,

- the standard method for determining the Zeleny index of ground common wheat shall be that recognized by the International Association for Cereal Chemistry (ICC), the standards of which are laid down under heading No 118: preparation of test flour from wheat samples for sedimentation test and heading No 116: determination of the sedimentation value (according to Zeleny) as an approximate measure of baking quality,
- the standard method for determining the Hagberg falling number of ground common wheat shall be that recognized by the International Association for Cereal Chemistry (ICC), the standards of which are laid down under heading No 107: determination of the falling number (according to Hagberg-Perten) as a measure of the degree of alpha amylase activity in grain and flour.

⁽¹⁾ OJ No L 281, 1. 11. 1975, p. 1.

⁽²⁾ OJ No L 139, 24. 5. 1986, p. 29.

⁽³⁾ OJ No L 281, 1. 11. 1975, p. 22.

⁽⁴⁾ OJ No L 139, 24. 5. 1986, p. 34.

⁽⁵⁾ OJ No L 178, 5. 7. 1984, p. 22.

⁽⁶⁾ OJ No L 197, 27. 7. 1984, p. 18.

2. Section 4.4 of Annex III is replaced by the following :

'4.4. Iron (III) ammonium citrate, with an iron content of 17 to 20 %, solution 3,5 grams per litre, prepared 24 hours before use.

Since the iron content of the citrate influences the results, the above limits must be strictly observed.'

3. An Annex IV is added in accordance with the Annex hereto.

Article 2

This Regulation shall enter into force on the day of its publication in the *Official Journal of the European Communities*.

It shall apply with effect from 1 July 1986.

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

Done at Brussels, 22 July 1986.

For the Commission

Frans ANDRIESEN

Vice-President

ANNEX

ANNEX IV

PRACTICAL REFERENCE METHOD FOR DETERMINING THE MINIMUM BREAD-MAKING QUALITY OF COMMON WHEAT**1. TITLE**

Method for test baking of wheat flour.

2. SCOPE

The method is applicable to flour, experimentally milled from wheat for the production of yeast raised bread (see also 10.3).

3. PRINCIPLE

A dough is made from flour, water, yeast, salt and sucrose, in a specified mixer. After dividing and rounding, the pieces are given 30 minutes' rest; they are moulded, placed on baking sheets and baked after a final proof of fixed duration. Dough handling properties are noted. The loaves are judged by volume and height.

4. INGREDIENTS**4.1. Yeast**

Active dry yeast Engedura (Gist-Brocades NV, Yeast Division) or a product having the same characteristics.

4.2. Water

Tap water.

4.3. Sugar-salt-ascorbic acid solution

Dissolve $30 \pm 0,5$ g of sodium chloride (commercial grade), $30 \pm 0,5$ g of sucrose (commercial grade), and $0,040 \pm 0,001$ g ascorbic acid in 800 ± 5 g of water. Prepare fresh daily.

4.4. Sugar solution

Dissolve $5 \pm 0,1$ g sucrose (commercial grade) in 95 ± 1 g of water. Prepare fresh daily.

4.5. Enzyme active malt flour

Commercial grade.

5. EQUIPMENT AND APPARATUS**5.1. Baking room**

Controlled to maintain a temperature of 22 to 25 °C.

5.2. Refrigerator

For maintaining a temperature of 4 ± 2 °C.

5.3. Balance

Maximum load 2 kg, accuracy 2 g.

5.4. Balance

Maximum load 0,5 kg, accuracy 0,1 g.

5.5. Analytical balance

Accuracy $0,1 \times 10^{-3}$ g.

5.6. Mixer

Stephan UMTA 10, with mixing arm model 'Detmold' (Stephan Söhne GmbH) or similar equipment having the same characteristics.

5.7. Proving cabinet

Controlled to maintain a temperature of 30 ± 1 °C.

5.8. Open plastic boxes

Made from polymethylmethacrylate (Plexiglas, Perspex). Inside dimensions : 25 × 25 × 15 cm height, wall thickness 0,5 ± 0,05 cm.

5.9. Square plastic sheets

Made from polymethylmethacrylate (Plexiglas, Perspex). At least 30 × 30 cm, thickness 0,5 ± 0,05 cm.

5.10. Moulder

Brabender ball homogenizer (Brabender OHG) or similar equipment having the same characteristics.

6. SAMPLING

According to ICC Standard No 101.

7. PROCEDURE**7.1. Determination of water uptake**

Determine the water absorption according to ICC Standard No 115 (see also 10.1).

7.2. Determination of malt flour addition

Determine the 'falling number' of the flour according to ISO 3093-1974. If the 'falling number' is higher than 250, determine the malt flour addition required to bring the 'falling number' within the range 200 to 250, using a series of mixtures of the flour with increasing quantities of malt flour (4.5). If the 'falling number' is lower than 250, no malt flour is required.

7.3. Reactivation of active dry yeast

Adjust the temperature of the sugar solution (4.4) to 35 ± 1 °C. Pour one part by weight of the active dry yeast into four parts by weight of this tempered sugar solution. Do not stir. Swirl if necessary.

Allow to stand for 10 ± one minute, then stir until a homogeneous suspension is obtained. Use this suspension within 10 minutes.

7.4. Temperature adjustment of the flour and the dough liquid.

The temperature of the flour and the water must be adjusted to give a dough temperature of 27 ± 1 °C after mixing.

7.5. Dough composition

Weigh, with a precision of 2 g, 10y/3 g flour on as-is moisture basis (corresponding to 1 kg flour on a 14 % mb), in which 'y' is the quantity of flour used in the farinograph test (see ICC Standard No 115, clause 9.1).

Weigh, with a precision of 0,2 g, the quantity of malt flour necessary to bring the 'falling number' within the range 200 to 250 (7.2).

Weigh 430 ± 5 g sugar-salt-ascorbic acid solution (4.3) and add water to a total mass of (x-9) · 10y/3 g (see 10.2) in which 'x' is the quantity of water used in the farinograph test (see ICC Standard No 115, clause 9.1). This total mass (usually between 450 and 650 g) must be achieved with a precision of 1,5 g.

Weigh 90 ± 1 g yeast suspension (7.3).

Note the total mass of the dough (P), which is the sum of the masses of flour, sugar-salt-ascorbic acid solution plus water, yeast suspension and malt flour.

7.6. Mixing

Before starting, bring the mixer to a temperature of 27 ± 1 °C by use of a suitable quantity of tempered water.

Place the liquid dough ingredients in the mixer and place the flour plus malt flour on top.

Start the mixer (speed 1, 1 400 rev/min and allow to run for 60 seconds. 20 seconds after the start of mixing, turn the scraper attached to the lid of the mixing bowl two revolutions.

Measure the temperature of the dough. If it is outside the range 26 to 28 °C, discard the dough and mix a new one after adjustment of ingredient temperatures.

Note dough properties using one of the following terms :

- non-sticky and machinable, for
- sticky and non-machinable.

To be considered as 'non-sticky and machinable' at the end of mixing, the dough should form a coherent mass which hardly adheres to the sides of the bowl and spindle of the mixer. It should be possible to collect the dough by hand and remove it from the mixing bowl in a single motion without noticeable loss.

7.7. Dividing and rounding

Weigh, with precision of 2 g, three pieces of dough according to the formula :

$p = 0,25 P$ where :

p = mass of scaled dough piece ;

P = total mass of dough.

Immediately round the pieces for 15 seconds in the moulder (5.10) and place them for 30 ± 2 minutes on the square plastic sheets (5.9), covered by the inverted plastic boxes (5.8) in the proving cabinet (5.7). Do not use dusting flour.

7.8. Moulding

Bring the pieces of dough on the plastic sheets, covered by the inverted boxes, to the moulder (5.10), and re-round each piece for 15 seconds. Do not remove cover from a piece of dough until immediately before rounding. Note dough properties again, using one of the following terms :

- non-sticky and machinable, or
- sticky and non-machinable.

To be considered as 'non-sticky and machinable' the dough should adhere hardly, or not at all, to the sides of the chamber so that it can freely rotate around itself and form a regular ball during the operation of the machine. At the end of the operation the dough should not stick to the sides of the dough-moulding chamber when the lid of the chamber is raised.

7.9.

7.10.

8.

9. TEST REPORT

The test report should mention :

- dough handling properties at the end of mixing, and at moulding,
- the 'falling number' of the flour without addition of malt flour,
- any anomalies observed.

It should further include :

- the method used,
- all details required for the identification of the sample.

10. GENERAL REMARKS

10.1. The English version of ICC Standard No 115 is the authentic text. As the French and German versions are not in conformity with this text, they must not be used.

10.2. The formula for the calculation of the quantity of dough liquid is based on the following considerations :

Addition of x ml water to the equivalent of 300 g flour at 14 % moisture produces the required consistency. As in the baking test 1 kg of flour (14 % moisture basis) is used, whereas x is based on 300 g of flour, for the baking test x divided by three and multiplied by 10 g of water is needed, so $10x/3$ g. The 430 g sugar-salt-ascorbic acid solution contains 15 g salt and 15 g sugar. This 430 g solution is included in the dough liquid. So to add $10x/3$ g water to the dough, $(10x/3 + 30)$ g dough liquid composed of the 430 g sugar-salt-ascorbic acid solution and an additional quantity of water must be added. Although part of the water added with the yeast suspension is absorbed by the yeast, this suspension also contains 'free' water. It is arbitrarily supposed that 90 g yeast suspension contains 60 g 'free' water. The quantity of the dough liquid must be corrected for this 60 g of 'free' water in the yeast suspension, so $10x/3$ plus 30 minus 60 g must finally be added. This can be rearranged as follows :

$(10x/3 + 30) - 60 = 10x/3 - 30 = (x/3 - 3) 10 = (x - 9) 10/3$, the formula given in clause 7.5.

If, e.g., a water addition x in the farinograph test was found of 165 ml, this value must be substituted in this formula, so to the 430 g sugar-salt-ascorbic acid solution water must be added to a total mass of :

$$(165 - 9) \cdot 10/3 = 156 \cdot 10/3 = 520 \text{ g.}$$

- 10.3. The method is not directly applicable to wheat. The procedure to be followed for characterizing the baking properties of wheat is as follows :

Clean the wheat, and determine the moisture content of the cleaned wheat. If the moisture content is within the range 15 to 16 %, do not temper the wheat. If the moisture content is outside this range, adjust the moisture content to $15,5 \pm 0,5$ %, at least three hours prior to milling.

Mill the wheat into flour using a Bühler laboratory mill MLU 202 or a Brabender Quadrumat Senior mill or similar equipment having the same characteristics.

Choose a milling procedure that yields a flour of minimum 72 % extraction, with an ash content of 0,50 to 0,60 % on dry matter basis. Determine the ash content of the flour according to the Annex to Commission Regulation No 162/67/EEC (OJ No 128, 27. 6. 1967, p. 2574/67) and the moisture content according to Annex II to Council Regulation (EEC) No 2731/75 (OJ No L 281, 1. 11. 1975, p. 22). Calculate the extraction rate by the equation :

$$E = \frac{(100 - f) F}{(100 - w) W} \cdot 100 \%$$

in which :

E = extraction rate ;

f = moisture of the flour ;

w = moisture content of the wheat ;

F = mass of flour produced with moisture content 'f' ;

W = mass of wheat milled with moisture content 'w'.

Note : Information concerning the ingredients and equipment to be used is published in Document T 77/300 of 31 March 1977 from the Instituut voor Graan, Meel en Brood, TNO — Postbus 15, Wageningen (Nederland).
