ANNEX I

CEREALS

PART I

1. DEFINITION OF MATTER OTHER THAN BASIC CEREALS OF UNIMPAIRED QUALITY

1.1. **Broken grains**

For durum wheat, common wheat and barley, the definition of 'broken grains' is that contained in standard EN 15587.

For maize, the definition of 'broken grains' is that contained in standard EN 16378.

1.2. **Grain impurities**

(a) *Shrivelled grains*

For durum wheat, common wheat and barley, the definition of 'shrivelled grains' is that contained in standard EN 15587. However, for barley from Estonia, Latvia, Finland and Sweden, 'shrivelled grains' means grains with a specific weight of at least 64 kilograms per hectolitre offered or tendered for, or placed in, intervention in those Member States, grains which, after elimination of all other matter referred to in this Annex, pass through sieves with apertures of 2,0 mm.

'Shrivelled grains' does not apply to maize.

(b) *Other cereals*

For durum wheat, common wheat and barley, the definition of 'other cereals' is that contained in standard EN 15587.

For maize, the definition of 'other cereals' is that contained in standard EN 16378.

(c) *Grains damaged by pests*

For durum wheat, common wheat and barley, the definition of 'grains damaged by pests' is that contained in standard EN 15587.

For maize, the definition of 'grains damaged by pests' is that contained in standard EN 16378.

(d) *Grains in which the germ is discoloured*

For durum wheat and common wheat, the definition is that contained in standard EN 15587.

'Grains in which the germ is discoloured' does not apply to barley or maize.

(e) *Grains overheated during drying*

For durum wheat, common wheat and barley, the definition of 'grains overheated during drying' is that contained in standard EN 15587.

For maize, the definition of 'grains overheated during drying' is that contained in standard EN 16378..

(f) *Mottled grains*

For durum wheat, the definition of 'mottled grains' is that contained in standard EN 15587.

'Mottled grains' does not apply to common wheat, barley or maize.

1.3. **Sprouted grains**

For durum wheat, common wheat and barley, the definition of 'sprouted grains' is that contained in standard EN 15587.

For maize, the definition of 'sprouted grains' is that contained in standard EN 16378.

1.4. **Miscellaneous impurities**

(a) *Extraneous seeds*

For durum wheat, common wheat and barley, the definition of 'extraneous seeds' is that contained in standard EN 15587.

For maize, the definition of 'extraneous seeds' is that contained in standard EN 16378.

'Noxious seeds' means seeds which are toxic to humans and animals, seeds hampering or complicating the cleaning and milling of cereals and seeds affecting the quality of products processed from cereals.

(b) *Damaged grains*

For durum wheat, common wheat and barley, the definition of 'damaged grains' is that contained in standard EN 15587.

For maize, the definition of 'damaged grains' is that contained in standard EN 16378.

In standard EN 15587, for durum wheat, common wheat and barley, the definition of 'grains affected by fusariosis' is included in that of 'damaged grains'.

(c) *Extraneous matter*

For durum wheat, common wheat and barley, the definition of 'extraneous matter' is that contained in standard EN 15587.

For maize, the definition of 'extraneous matter' is that contained in standard EN 16378.

(d) *Husks (cob fragments in the case of maize)*

(e) *Ergots*

(f) *Decayed grains*

For durum wheat and common wheat, the definition of 'decayed grains' is that contained in standard EN 15587.

'Decayed grains' does not apply to barley or maize.

(g) *Impurities of animal origin.*

1.5. **Live pests**

1.6. **Mitadiné grains**

Mitadiné grains of durum wheat are grains whose kernels cannot be regarded as entirely vitreous. They are defined in standard EN 15585.

2. SPECIFIC FACTORS TO TAKE INTO CONSIDERATION FOR EACH TYPE OF CEREAL FOR THE DEFINITION OF IMPURITIES

2.1. **Durum wheat**

‘Grain impurities’ means shrivelled grains, grains of other cereals, grains damaged by pests, grains in which the germ is discoloured, mottled grains and grains overheated during drying.

‘Miscellaneous impurities’ means extraneous seeds, damaged grains (including grains affected by fusariosis), extraneous matter, husks, ergot, decayed grains and impurities of animal origin.

2.2. **Common wheat**

‘Grain impurities’ means shrivelled grains, grains of other cereals, grains damaged by pests, grains in which the germ is discoloured (only where the content exceeds 8 %) and grains overheated during drying.

‘Miscellaneous impurities’ means extraneous seeds, damaged grains (including grains affected by fusariosis), extraneous matter, husks, ergot, decayed grains and impurities of animal origin.

2.3. **Barley**

‘Grain impurities’ means shrivelled grains, grains of other cereals, grains damaged by pests and grains overheated during drying.

‘Miscellaneous impurities’ means extraneous seeds, damaged grains (including grains affected by fusariosis), extraneous matter, husks and impurities of animal origin.

2.4. **Maize**

‘Grain impurities’ means grains of other cereals, grains damaged by pests and grains overheated during drying.

‘Miscellaneous impurities’ means extraneous seeds, damaged grains, extraneous matter, cob fragments and impurities of animal origin.

PART II Methods used for determining the quality of cereals offered or tendered for, or placed in, intervention

Pursuant to Article 4, the following methods are to be used to determine the quality of cereals offered or tendered for, or placed in, intervention:

(a) reference method for determining matter other than basic cereals of unimpaired quality:

(i) for common wheat, durum wheat and barley: standard EN 15587,

(ii) for maize: standard EN 16378;

(b) reference method for determining the moisture content:

(i) for maize: standard EN ISO 6540,

(ii) for cereals other than maize: standard EN ISO 712, or an infrared technology-based method complying with standard EN 15948.

In the event of a dispute, only the results resulting from applying standard EN ISO 6540 for maize and standard EN ISO 712 for cereals other than maize are to be considered valid;

(c) reference method for determining the non-stickiness and machinability of the dough obtained from common wheat: that set out in Part III of this Annex;

(d) reference method for determining the protein content in durum wheat and ground common wheat: that set out in:

(i) standard EN ISO 20483, or

(ii) standard CEN ISO/TS 16634-2.

In the event of a dispute, only the results obtained from applying standard EN ISO 20483 are to be considered valid;

(e) reference method for determining the Zeleny index of ground common wheat: that set out in standard EN ISO 5529;

(f) reference method for determining the Hagberg falling number (amylase activity test): that set out in standard EN ISO 3093;

(g) reference method for determining the rate of loss of the vitreous aspect of durum wheat: that set out in standard EN 15585;

(h) reference method for determining the specific weight: that set out in standard EN ISO 7971/3;

(i) sampling and analysis methods for establishing the rate of mycotoxins: those referred to in the Annex to Commission Regulation (EC) No 1881/2006[(1)] and set out in Annexes I and II to Commission Regulation (EC) No 401/2006[(2)].

PART III Method for determining the non-stickiness and machinability of the dough obtained from common wheat1.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.
3.Principle

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.Ingredients4.1.Yeast

Active dry yeast of type Saccharomyces cerevisiae DHW-Hamburg-Wansbeck or a product having the same characteristics.
4.2.Tap water4.3.Sugar-salt-ascorbic acid solution

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

Dissolve 5 ± 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 apparatus5.1.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 Soehne 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 homogeniser (Brabender OHG) or similar equipment having the same characteristics.
6.Sampling

According to standard EN ISO 24333.
7.Procedure7.1.Determination of water uptake

Determine the water absorption according to ICC Standard No 115/1.
7.2.Determination of malt flour addition

Determine the 'falling number' of the flour according to standard EN ISO 3093. If the 'falling number' is higher than 250, determine the malt flour addition required to bring it within the range 200 to 250, using a series of mixtures of the flour with increasing quantities of malt flour (point 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 (point 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 ± 1 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, 10 y/3 g flour on as-is moisture basis (corresponding to 1 kg flour on a 14 % moisture basis), in which 'y' is the quantity of flour used in the farinograph test (see ICC Standard No 115/1).

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 (point 7.2).

Weigh 430 ± 5 g sugar-salt-ascorbic acid solution (point 4.3) and add water to a total mass of (x – 9) 10 y/3 g, (see point 10.2) in which 'x' is the quantity of water used in the farinograph test (see ICC Standard No 115/1). 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 (point 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. Twenty 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, or

— sticky and non-machinable.

To be considered '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 (point 5.10) and place them for 30 ± 2 minutes on the square plastic sheets (point 5.9), covered by the inverted plastic boxes (point 5.8) in the proving cabinet (point 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 (point 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:

(a) non-sticky and machinable, or

(b) 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.

8.Test report

The test report shall mention:

(a) dough-handling properties at the end of mixing, and at moulding,

(b) the 'falling number' of the flour without addition of malt flour,

(c) any anomalies observed.

(d) the method used,

(e) all details required for the identification of the sample.

9.General remarks9.1.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 10 x/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 10 x/3 g water to the dough, (10 x/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 10 x/3 plus 30 minus 60 g must finally be added. This can be rearranged as follows: (10 x/3 + 30) – 60 = 10 x/3 – 30 = (x/3 – 3) 10 = (x – 9) 10/3, the formula given in point 7.5. If, for example, 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) 10/3 = 156 × 10/3 = 520 g.

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

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

Mill the wheat into flour using a Buehler 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 Annex II to Commission Regulation (EU) No 234/2010[3] and the moisture content according to this Regulation. Calculate the extraction rate by the equation:

$E = (((100 – f) F)/(100 – w) W) \times 100\ \%$

where:

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, Netherlands.

PART IV Methodology of sampling and analyses for cereals1.

For each lot of cereals, the quality characteristics shall be established on the basis of a representative sample of the lot offered, consisting of samples taken at the rate of once every delivery for at least every 60 tonnes.
2.

The reference methods to be used for determining the quality of cereals offered or tendered for, or placed in, intervention are those set out in Parts I, II and III of this Annex.
3.

In cases of dispute, the paying agency shall have the necessary tests on the cereals in question carried out again, the cost being met by the losing party.

PART V Price increases and reductionsTable IPrice increases for moisture content for cereals other than maizeMoisture content(%)Increases(EUR/tonne)Less than 12.5 to 120,5Less than 12 to 11,51Less than 11,51.5Price increases for moisture content for maizeMoisture content(%)Increases(EUR/tonne)Less than 12 to 11,50,5Less than 11,51Table IIPrice reductions for moisture content for cereals other than maizeMoisture content(%)Reduction(EUR/tonne)More than 13,0 to 13,50,5More than 13,5 to 14,01,0More than 14,0 to 14,51,5Price reductions for moisture content for maizeMoisture content(%)Reduction(EUR/tonne)More than 12,5 to 13,00,5More than 13,0 to 13,51,0

TABLE III

Price increases for protein content of common wheat

Protein content[a](N × 5,7)	**Price increase(EUR/tonne)**
More than 12,0	2,5

a As % of dry matter.

TABLE IV

Price reductions for protein content for common wheat

Protein content[a](N × 5,7)	Price reduction(EUR/tonne)
Less than 11,5 to 11,0	2,5

a As % of dry matter.

PART VI Calculation of prices increases and reductions

The price adjustments provided for in Article 26(1) shall be expressed in euro per tonne for offers or tenders for intervention by multiplying the price referred to in that Article by the sum of the established percentage increases or reductions, as follows:

(a) where the moisture content of cereals offered or tendered for intervention is less than 12,0 % for maize and 12,5 % for other cereals, the price increases to be applied shall be those listed in Table I of Part V of this Annex. Where the moisture content of these cereals offered or tendered for intervention is higher than 12,5 % for maize and 13,0 % for other cereals, the price reductions to be applied shall be those listed in Table II of Part V of this Annex;

(b) where the protein content of common wheat is higher than 12,0 %, the increases to be applied shall be those listed in Table III of Part V of this Annex. Where the protein content of common wheat is less than 11,5 %, the reductions to be applied shall be those listed in Table IV of Part V of this Annex.

(**1**) Commission Regulation (EC) No 1881/2006 of 19 December 2006 setting maximum levels for certain contaminants in foodstuffs (OJ L 364, 20.12.2006, p. 5).

(**2**) Commission Regulation (EC) No 401/2006 of 23 February 2006 laying down the methods of sampling and analysis for the official control of the levels of mycotoxins in foodstuffs (OJ L 70, 9.3.2006, p. 12).

(**3**) Commission Regulation (EU) No 234/2010 of 19 March 2010 laying down certain detailed rules for the application of Council Regulation (EC) No 1234/2007 on the granting of export refunds on cereals and the measures to be taken in the event of disturbance on the market for cereals (OJ L 72, 20.3.2010, p. 3).

Status:
Point in time view as at 31/01/2020.

Changes to legislation:
There are currently no known outstanding effects for the Commission Implementing Regulation (EU) 2016/1240, ANNEX I.