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Cereals and cereal products — Determination of moisture content —

Part 2: Automatic drying oven method

Céréales et produits céréaliers — Détermination de la teneur en eau —

Partie 2: Méthode par séchage en étuve automatique

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulses,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 338, *Cereal and cereal products,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 712 series can be found on the ISO website.

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Cereals and cereal products — Determination of moisture content —

Part 2:
Automatic drying oven method

1 Scope

This document specifies an automatic method for the reference method (see ISO 712-1) for the determination of moisture content of cereals and cereal products using an automatic drying oven.

This document is applicable to wheat, rice (paddy, husked and milled), barley, millet (*Panicum miliaceum*), rye, oats, triticale, sorghum in the form of grains, milled grains, semolina and flour.

The method does not apply to maize and pulses.

NOTE For moisture content determination in maize, see ISO 6540, and for pulses, see ISO 24557.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 712-1, *Cereals and cereal products — Determination of moisture content — Part 1: Reference method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
moisture content
loss of mass experienced by a product

Note 1 to entry: The moisture content is determined under the conditions specified in this document.

Note 2 to entry: Moisture content is expressed as a percentage.

4 Principle

A laboratory sample is milled, where necessary, once conditioned. A test portion is automatically dried and weighed by an automatic drying oven at a temperature between 130 °C and 133 °C. Due to the continuous air flow within the drying chamber of the automatic drying oven, the drying process takes considerably less time than in a conventional drying chamber without ventilation.

5 Apparatus

The usual laboratory apparatus and, in particular, the following shall be used.

5.1 Grinding mill, having the following characteristics:

a) made of material which does not absorb moisture;

b) easy to clean and having as little dead space as possible;

c) enabling grinding to be carried out rapidly and uniformly, without appreciable development of heat (the difference in temperature before and after grinding is ≤ 5 °C);

NOTE A grinding mill fitted with a cooling device can conform to this requirement.

d) tightness to air to avoid water exchange between sample and external air;

e) adjustable so as to obtain particles of the dimensions indicated in Table 1.

5.2 Metal dish, non-corrodible under the test conditions, or **glass dish**, having an effective surface area enabling the test portion to be distributed so as to give a mass per unit area of not more than 0,3 g/cm^2. The dish shall be used without a lid, because the dish with portion is placed into the drying chamber directly after weighing.

5.3 Automatic drying oven, electrically heated and including an analytical balance, controlled in such a way that, during normal working, the temperature of the air and of the shelves carrying the test portions is maintained within the range of 130 °C to 133 °C in the vicinity of the test portions and is capable of weighing to an accuracy of ± 0,001 g.

The automatic drying oven shall automatically reweigh the sample dishes after the set drying time. The moisture content shall be calculated and saved by the software operating the oven.

The automatic drying oven shall be constructed in such a way that its short openings have no influence on the temperature in the drying chamber (130 °C to 133 °C) or that after the insertion of a sample, a temperature of 130 °C can be reached again in less than 5 min, so that test portions can be dried simultaneously.

6 Sampling

Sampling is not part of the method specified in this document. A recommended sampling method is given in ISO 24333.

A representative sample, in an airtight packaging, should have been sent to the laboratory. It should not have been damaged or changed during transport or storage.

7 Preparation of the test sample

7.1 Products not requiring grinding

Products having the particle size characteristics indicated in Table 1 may be used without grinding.

Mix the laboratory sample thoroughly before taking the test portion (see 8.2).