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Wheat flour — Physical characteristics of doughs —

Part 1: Determination of water absorption and rheological properties using a farinograph

Farines de blé tendre — Caractéristiques physiques des pâtes —

Partie 1: Détermination de l'absorption d'eau et des caractéristiques rhéologiques au moyen du farinographe

FDIS stage

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

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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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).

This ~~fourth~~fifth edition cancels and replaces the ~~third~~fourth edition (ISO 5530-1:~~2013),~~2025), of which ~~has been technically revised.~~it constitutes a minor revision.

The ~~main~~ changes are as follows:

~~—~~ the values in B.5.1~~a wheat flour interlaboratory test was performed in 2015 to evaluate the repeatability and reproducibility of the test method specified in this document, and the results have been added as ;~~

~~— more detailed procedure for electronic devices has been added.~~

— have been modified.

A list of all parts in the ISO 5530 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Wheat flour — Physical characteristics of doughs —

Part 1:
Determination of water absorption and rheological properties using a farinograph

1 Scope

This document specifies a method using a farinograph for the determination of the water absorption of flours and the mixing behaviour of doughs made from them by a constant flour mass procedure or by a constant dough mass procedure.

The method is applicable to experimental and commercial flours from wheat (*Triticum aestivum* L.).

NOTE This document is related to ICC 115/1[5] and AACC Method 54-21.02[6].

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*

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

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
consistency
resistance of a dough to being mixed in specific conditions

Note 1 to entry: For the purposes of this document, consistency refers to the resistance of dough being mixed in a farinograph under the conditions specified in the methodology.

Note 2 to entry: It is expressed in *farinograph unit (FU)* (3.2).

Note 3 to entry: Specific conditions include mixing conditions, temperature, hydration, etc.

3.2
farinograph unit
FU
arbitrary unit used for *consistency* (3.1) on the farinogram

Note 1 to entry: For the mathematical expression of FU, see 6.1.

Note 2 to entry: It is also possible to define an FU as a torque expressed in Nm, measured in the axis of the mixer.

3.3
maximum consistency
consistency (3.1) measured at the end of the *dough development time* (3.5)

Note 1 to entry: For the mathematical expression of maximum consistency, see 9.3.

Note 2 to entry: It is expressed in *farinograph unit (FU)* (3.2).

3.4
water absorption of flour
W*a*
volume of water required to produce a dough with a *maximum consistency* (3.3) of 500 *farinograph unit (FU)* (3.2) under the specified operating conditions

Note 1 to entry: Water absorption is expressed in millilitres per 100 g of flour at 14 % (mass fraction) moisture content to an accuracy of 0,1 ml.

Note 2 to entry: Water absorption can also be expressed in % (ml per 100 g).

3.5
dough development time
DDT
DEPRECATED: peak time
time from the beginning of the addition of water to the point on the curve immediately before the first sign of the decrease of *maximum consistency* (3.3)

Note 1 to entry: In cases where two peaks are observed, the second peak shall be used to measure the DDT.

Note ~~1~~2 to entry: See Figure 1 and 9.3.

Note ~~2~~3 to entry: It is expressed in minutes to the nearest 0,1 min.

3.6
stability
difference in time between the point where the top part of the curve intercepts, for the first time, the line of 500 *farinograph unit (FU)* (3.2) and the last point where leaves this line

Note 1 to entry: This value measures the tolerance of the flour to mixing.

Note 2 to entry: When the *maximum consistency* (3.3) of a peak curve deviates from the 500 FU line, the line of this consistency should be used to read the interceptions (see also B.5.2).

Note 3 to entry: The stability is expressed in minutes, to an accuracy of 0,5 min.

3.7
degree of softening
difference between the height of the centre of the curve at the point where it begins to decline (*dough development time* (3.5)) and the height of the centre of the curve 12 min after that point

Note 1 to entry: It is expressed in *farinograph unit (FU)* (3.2).

Note 2 to entry: In cases where two peaks appear, the second peak is considered to determine the degree of softening.

Note 3 to entry: The degree of softening should be expressed to the nearest 5 farinograph unit (FU).