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Pšenična moka - Fizikalne značilnosti testa - 2. del: Ugotavljanje reoloških lastnosti z ekstenzografom

Wheat flour - Physical characteristics of doughs - Part 2: Determination of rheological properties using an extensograph

Farines de blé tendre - Caractéristiques physiques des pâtes - Partie 2: Détermination des caractéristiques rhéologiques au moyen de l'extensographe

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**Wheat flour — Physical characteristics of
doughs —**

Part 2:

**Determination of rheological properties
using an extensograph**

Farines de blé tendre — Caractéristiques physiques des pâtes —

*Partie 2: Détermination des caractéristiques rhéologiques au moyen de
l'extensographe*



Reference number
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ISO 5530-2:2012(E)**Foreword**

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 5530-2 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulses*.

This third edition cancels and replaces the second edition (ISO 5530-2:1997), which has been technically revised.

ISO 5530 consists of the following parts, under the general title *Wheat flour — Physical characteristics of doughs*:

- *Part 1: Determination of water absorption and rheological properties using a farinograph*
- *Part 2: Determination of rheological properties using an extensograph*
- *Part 3: Determination of water absorption and rheological properties using a valorigraph*

Wheat flour — Physical characteristics of doughs —

Part 2:

Determination of rheological properties using an extensograph

1 Scope

This part of ISO 5530 specifies a method, using an extensograph, for the determination of the rheological properties of wheat flour dough in an extension test. The recorded load–extension curve is used to assess general quality of flour and its response to improving agents.

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

NOTE This part of ISO 5530 is based on ICC 114.^[3]

2 Normative references

The following referenced documents are indispensable for the application 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, *Cereals and cereal products — Determination of moisture content — Reference method*

ISO 5530-1:—,¹⁾ *Wheat flour — Physical characteristics of doughs — Part 1: Determination of water absorption and rheological properties using a farinograph*

3 Terms and definitions

For the purposes of this part of ISO 5530, the following terms and definitions apply.

3.1

energy

capacity to do work

NOTE 1 For the purposes of this part of ISO 5530, the energy is determined as the area under a recorded curve. The energy describes the work applied when stretching a dough sample.

NOTE 2 The area is measured by a planimeter and reported in square centimetres.

3.2

extensibility

E

distance travelled by the recorder paper from the moment that the hook touches the test piece until rupture of (one of the strings of) the test piece

NOTE See 9.4 and Figure 1.

3.3

extensograph water absorption

volume of water required to produce a dough with a consistency of 500 farinograph units (FU) after 5 min mixing, under specified operating conditions

NOTE Extensograph water absorption is expressed in millilitres per 100 g of flour at 14,0 % mass fraction moisture content.

1) To be published. (Revision of ISO 5530-1:1997)

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3.4 maximum resistance
 R_m
 mean of the maximum heights of the extensograph curves from the two test pieces, provided that the difference between them does not exceed 15 % of their mean value

NOTE See 9.3.1 and Figure 1.

3.5 ratio (*RIE*)
 quotient of the maximum resistance, R_m , and the extensibility or the resistance after 50 mm transposition of the recorder paper, R_{50} , and the extensibility

NOTE The ratio is an additional factor in the review of the dough behaviour.

3.6 resistance at constant deformation
 mean of the heights of the extensograph curves after 50 mm transposition of the recorder paper from the two test pieces, provided that the difference between them does not exceed 15 % of their mean value

NOTE See 9.3.2 and Figure 1.

3.7 stretching characteristics
 <dough> resistance of dough to extension and the extent to which it can be stretched until breaking, under specified operating conditions

NOTE 1 The resistance is expressed in arbitrary units (extensograph units, EU).

NOTE 2 The extent of stretching is expressed in millimetres or centimetres.

4 Principle

Dough is prepared from flour, water and salt in a farinograph under specified conditions. A test piece is then moulded on the balling unit and moulder of the extensograph into a standard shape. After a fixed period of time, the test piece is stretched and the force required recorded. Immediately after these operations, the same test piece is subjected to two further cycles of moulding, rest period and stretching.

The size and shape of the curves obtained are a guide to the physical properties of the dough. These physical properties influence the end-use quality of the flour.

5 Reagents

Use only reagents of recognized analytical grade, unless otherwise specified, and distilled or demineralized water or water of equivalent purity.

5.1 Sodium chloride.**6 Apparatus**

Usual laboratory apparatus and, in particular, the following.

6.1 Extensograph,²⁾ with a thermostat consisting of a constant temperature water bath (see Annex A), with the following operating characteristics:

2) This document has been drawn up on the basis of the Brabender Extensograph, which is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product. Other equipment may be used if it can be shown to give comparable results.