



# SLOVENSKI STANDARD

oSIST ISO 5530-1:2014

01-april-2014

---

**Pšenična moka - Fizikalne značilnosti testa - 1. del: Določanje vpijanja vode in reoloških lastnosti s farinografom**

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

**Ta slovenski standard je istoveten z: ISO 5530-1:2013**

---

**ICS:**

67.060

Žita, stročnice in proizvodi iz njih

Cereals, pulses and derived products

**oSIST ISO 5530-1:2014**

**en**



INTERNATIONAL  
STANDARD

ISO  
5530-1

Third edition  
2013-04-15

---

---

**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*



Reference number  
ISO 5530-1:2013(E)

© ISO 2013



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2013

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

<b>Contents</b>	Page
<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>3</b>
<b>5 Reagent</b> .....	<b>3</b>
<b>6 Apparatus</b> .....	<b>3</b>
<b>7 Sampling</b> .....	<b>3</b>
<b>8 Procedure</b> .....	<b>4</b>
8.1 Determination of the moisture content of the flour.....	4
8.2 Preparation of farinograph.....	4
8.3 Test portion.....	4
8.4 Common rules of determination.....	8
<b>9 Evaluation of the farinogram and calculation of the derived rheological characteristics</b> .....	<b>8</b>
9.1 General.....	8
9.2 Water absorption of flour.....	8
9.3 Characteristics relating to the consistency of dough.....	9
<b>10 Precision</b> .....	<b>10</b>
10.1 Interlaboratory tests.....	10
10.2 Repeatability.....	11
10.3 Reproducibility.....	11
<b>11 Test report</b> .....	<b>11</b>
<b>Annex A (informative) Description of the farinograph</b> .....	<b>12</b>
<b>Annex B (informative) Examples of farinograms</b> .....	<b>17</b>
<b>Annex C (informative) Results of interlaboratory tests</b> .....	<b>22</b>
<b>Bibliography</b> .....	<b>26</b>

**ISO 5530-1:2013(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 5530-1 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 5530-1:1997), 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 1:

# Determination of water absorption and rheological properties using a farinograph

## 1 Scope

This part of ISO 5530 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 flour from wheat (*Triticum aestivum* L.).

NOTE This part of ISO 5530 is based on ICC 115/1[1] and AACC Method 54-21.2.[2]

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

## 3 Terms and definitions

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

### 3.1

#### **consistency**

resistance of a dough to being mixed in a farinograph at a specified constant speed

Note 1 to entry: It is expressed in farinograph arbitrary units (see 3.2).

### 3.2

#### **farinograph unit**

#### **FU**

arbitrary unit for consistency on the farinogram

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

Note 2 to entry: It is also possible to define “farinograph unit (FU)” as a twisting moment of 100 g. cm, measured in the axis of the mixer.

### 3.3

#### **maximum consistency**

consistency measured at the end of dough development time

Note 1 to entry: For the mathematical expression of maximum consistency, see 9.2.

Note 2 to entry: It is expressed in farinograph units (FU).

Note 3 to entry: See 3.7.

**ISO 5530-1:2013(E)****3.4****water absorption of flour**

volume of water required to produce a dough with a maximum consistency of 500 FU, 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.

**3.5****dough development time****DDT**

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

Note 1 to entry: In those cases where two maxima are observed, use the second maximum to measure the dough development time.

Note 2 to entry: See [Figure 1](#) and 9.3.

Note 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 FU and the last point where leaves this line

Note 1 to entry: This value, in general, gives some indication of the tolerance of the flour to mixing.

Note 2 to entry: When the maximum consistency deviates from the  $(500 \pm 20)$  FU line, the line of this consistency should be used to read the interceptions.

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 centre of the curve at the point where it begins to decline and the centre of the curve 12 min after that point

Note 1 to entry: It is expressed in farinograph units (FU).

Note 2 to entry: In the case where two peaks appear, the second peak is considered.

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

Note 4 to entry: If another time is used to carry out this method, this has to be detailed in the report along with information on the reference standard applied. The definite time is usually 12 min.

**3.8****mixing tolerance index****MTI**

difference from the top of the curve at peak (DDT) to the top of the curve measured at 5 min after peak is reached

Note 1 to entry: It is expressed in farinograph units (FU).

**3.9****farinograph quality number****FQN**

length, along the time axis, between the point of the addition of water and the point where the height of the centre of the curve has decreased by 30 FU, compared to the height of the centre of the curve at DDT

Note 1 to entry: It is expressed in millimetres to an accuracy of 1 mm.