



**International
Standard**

ISO 24557

**Pulses — Determination of moisture
content — Air-oven method**

*Légumineuses — Détermination de la teneur en eau — Méthode
par séchage à l'étuve*

**Second edition
2024-11**

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Published in Switzerland

Contents

	Page
Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Principle	1
5 Apparatus	1
6 Sampling	2
7 Procedure	3
7.1 General.....	3
7.2 Preconditioning of laboratory sample.....	3
7.3 Grinding and test portion.....	3
7.4 Drying.....	3
8 Calculation and expression of the results	4
8.1 Calculation.....	4
8.2 Expression of results.....	4
9 Precision	4
9.1 Interlaboratory test.....	4
9.2 Repeatability.....	4
9.3 Reproducibility.....	4
9.4 Critical difference.....	5
9.4.1 General.....	5
9.4.2 Comparison of two groups of measurements in one laboratory.....	5
9.4.3 Comparison of two groups of measurements in two laboratories.....	5
9.5 Uncertainty, <i>U</i>	5
10 Test report	5
Annex A (informative) Results of an interlaboratory test	7
Bibliography	9

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.

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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 24557:2009), which has been technically revised.

The main changes are as follows:

- modified description of the apparatus to be used for consistency with ISO 6540 and ISO 712-1, which give moisture determination methods for corn and cereals, respectively;
- minor modifications of the protocol to align with ISO 6540 and ISO 712-1 to simplify the daily routine of laboratories.

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.

Pulses — Determination of moisture content — Air-oven method

1 Scope

This document specifies a routine reference method for the determination of moisture content of pulses.

This document is applicable to chickpeas, lentils, peas, lupinus and all classes of beans with the exception of soybeans.

2 Normative references

There are no normative references in this document.

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 fraction

Note 1 to entry: The moisture content is expressed as a percentage mass fraction of loss undergone by the product under the conditions specified in this document.

<https://standards.iteh.ai/catalog/standards/iso/a09fe621-cc84-4ff1-af21-5aa65e3d6dc2/iso-24557-2024>

4 Principle

The method determines moisture content as the loss of mass fraction, expressed as a percentage, of a sample when heated under specified conditions. A preconditioning stage is used to minimize moisture loss during the grinding stage.

5 Apparatus

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

5.1 Laboratory mill, having the following characteristics:

- a) made of material that does not absorb moisture;
- b) easy to clean and having as little dead space as possible;
- c) enabling grinding of 30 g of pulses grains to be carried out rapidly and uniformly, without appreciable development of heat and, as far as possible, without contact with the outside air;
- d) adjustable so as to obtain particle size characteristics given in [Table 1](#).

Table 1 — Particle size characteristics of products not requiring grinding

Particle size characteristics mm	Proportion %
≤ 1,7	100
> 1,0	≤ 10
< 0,5	≥ 50

Cutting grinders ¹⁾ cooled by a water-circulation systems with a rotation speed in the range of 20 000 r/min to 25 000 r/min are strongly recommended and suitable with these requirements.

5.2 Constant temperature oven, either gravity-convection or mechanical-convection, capable of being maintained within the range of 130 °C to 133 °C.

The oven shall have a heat capacity such that, when initially adjusted to a temperature of 131,5 °C, it can again reach this temperature in less than 45 min (preferably in less than 30 min) after insertion of the maximum number of test portions that can be dried simultaneously.

For the verification of the condition 131,5 °C ± 1,5 °C, a metrological control shall be performed.

An alternative to the metrological control can be done with the determination of the effectiveness of the ventilation using durum wheat semolina, of maximum particle size 1 mm, as the test material. The ventilation may be tested by:

- a) inserting the maximum number of test portions that the oven can accommodate;
- b) drying them at a temperature of 131,5 °C ± 1,5 °C;
- c) heating the same test portions for 2 h and then for a further 1 h.

The results should not differ by more than 0,15 g of moisture per 100 g of sample.

5.3 Moisture metal dish, non-corrodible under the test conditions, or **glass dish**, with a lid and having an effective surface area enabling the test portion to be distributed so as to give a mass per unit area of ≤ 0,3 g/cm².

5.4 Drying trays, made of a non-absorbent material (glass or metal), and having an effective surface area that enables a test portion of 50 g to be a single layer.

5.5 Airtight desiccator, with an effective desiccant.

5.6 Analytical balance, able to weigh with an accuracy of ±0,001 g and therefore having a display accuracy of 0,000 1 g capable of being read to at least the nearest 1 mg.

6 Sampling

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

Ensure that the laboratory receives a sample that is truly representative and that has not been damaged or changed during transport and storage.

1) The IKA A 10 and Foss Knifetec grinders are examples of suitable products available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of these products. Equivalent products may be used if they can be shown to lead to the same results.