

INTERNATIONAL  
STANDARD

**ISO**  
**1108**

Second edition  
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**Spices and condiments — Determination of  
non-volatile ether extract**

*Épices — Détermination de l'extrait étheré non volatil*



Reference number  
ISO 1108:1992(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.

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.

International Standard ISO 1108 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Sub-Committee SC 7, *Spices and condiments*.

This second edition cancels and replaces the first edition (ISO 1108:1980), of which it constitutes a technical revision.

# Spices and condiments — Determination of non-volatile ether extract

## 1 Scope

This International Standard specifies a method for the determination of the non-volatile ether extract in spices and condiments.

It is applicable to most spices and condiments. In view of the number and variety of such products, however, it may be necessary in particular cases to modify the method or even to choose a more suitable method.

Such modifications or other methods will be indicated in the International Standards giving specifications for the spices and condiments in question.

## 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 939:1980, *Spices and condiments — Determination of moisture content — Entrainment method*.

ISO 948:1980, *Spices and condiments — Sampling*.

ISO 2825:1981, *Spices and condiments — Preparation of a ground sample for analysis*.

## 3 Definition

For the purposes of this International Standard, the following definition applies.

**3.1 non-volatile ether extract:** The whole of the non-volatile substances extracted by diethyl ether under the conditions specified in this International Standard.

## 4 Principle

Extraction of the material with diethyl ether, removal of the volatile fractions, removal of the insoluble substances, drying of the non-volatile residue and weighing.

## 5 Reagent

**5.1 Diethyl ether,** anhydrous, analytical reagent grade.

## 6 Apparatus

Usual laboratory apparatus and, in particular, the following.

**6.1 Apparatus for continuous extraction.**

**6.2 Oven,** capable of operating at  $110\text{ °C} \pm 2\text{ °C}$ .

**6.3 Rotary evaporator.**

**6.4 Analytical balance,** accurate to  $\pm 0,001\text{ g}$ .

## 7 Sampling

Sampling shall have been carried out in accordance with ISO 948.

## 8 Preparation of the test sample

Prepare the test sample using the method specified in ISO 2825.

## 9 Procedure

### 9.1 Test portion

Weigh, to the nearest 1 mg, approximately 2 g of the test sample (clause 8).

NOTE 1 This quantity of test portion is generally sufficient. However, if it is necessary to use a different quantity, this will be specified in the International Standard specific to the spice or condiment concerned.

### 9.2 Determination

**9.2.1** Extract the test portion (9.1) with the diethyl ether (5.1) in the continuous-extraction apparatus (6.1) for 18 h. Eliminate the diethyl ether by distillation, using the extractor flask connected to a rotary evaporator (6.3), taking care to rinse the extractor with approximately 20 ml of diethyl ether. Dry the flask in the oven (6.2) set at 110 °C, until the difference in mass between two successive weighings is not more than 2 mg.

**9.2.2** Mix, shaking gently, the residue in the flask with 2 ml to 3 ml of the diethyl ether at laboratory temperature; allow to settle and decant the supernatant solution.

**9.2.3** Repeat the extraction procedure and eliminate the diethyl ether as before, until no more of the residue dissolves. Dry the flask again as before until the difference in mass between two successive weighings is not more than 2 mg.

## 10 Expression of results

The non-volatile ether extract, expressed as a percentage by mass on the dry basis, is equal to

$$(m_1 - m_2) \times \frac{100}{m_0} \times \frac{100}{100 - H}$$

where

- $m_0$  is the mass, in grams, of the test portion;
- $m_1$  is the mass, in grams, of the flask plus residue obtained after drying in 9.2.1;
- $m_2$  is the mass, in grams, of the flask and the insoluble residue obtained in 9.2.3;
- $H$  is the moisture content, expressed as a percentage by mass, of the sample as received, determined in accordance with ISO 939.

## 11 Test report

The test report shall specify the method used and the result obtained. It shall also mention all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents which may have influenced the result.

The test report shall include all information necessary for the complete identification of the sample.

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**Descriptors:** agricultural products, food products, seasonings, spices, chemical analysis, determination of content, non-volatile matter, ethers.

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