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# International Standard



# 930

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## Spices and condiments — Determination of acid-insoluble ash

*Épices — Détermination des cendres insolubles dans l'acide*

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**Descriptors** : agricultural products, spices, chemical analysis, determination of content, ashes, insoluble matter, acids, hydrochloric acid.

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 930 was developed by Technical Committee ISO/TC 34, *Agricultural food products*.

It was submitted directly to the ISO Council, in accordance with clause 5.10.1 of part 1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 930-1969, which had been approved by the member bodies of the following countries :

Australia	Germany, F. R.	Romania
Brazil	Greece	South Africa, Rep. of
Bulgaria	Hungary	Thailand
Canada	India	Turkey
Chile	Iran	United Kingdom
Colombia	Israel	USSR
Czechoslovakia	Korea, Rep. of	Yugoslavia
Egypt, Arab Rep. of	Poland	
France	Portugal	

No member body had expressed disapproval of the document.

# Spices and condiments — Determination of acid-insoluble ash

## 0 Introduction

This International Standard 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 and other methods will be indicated in the International Standards giving specifications for the spices and condiments in question.

## 1 Scope and field of application

This International Standard specifies a method for the determination of acid-insoluble ash from spices and condiments.

## 2 References

ISO 928, *Spices and condiments — Determination of total ash*.

ISO 929, *Spices and condiments — Determination of water-insoluble ash*.

## 3 Definition

**acid-insoluble ash** : The part of the total ash, or water-insoluble ash, remaining after treatment with hydrochloric acid under the conditions specified in this International Standard.

## 4 Principle

Treatment of the total ash or of the water-insoluble ash, obtained as described in ISO 928 or ISO 929, respectively, with hydrochloric acid, filtration, ignition and weighing of the residue.

## 5 Reagents

All reagents shall be of recognized analytical quality. The water used shall be distilled water or water of at least equivalent purity.

### 5.1 Hydrochloric acid solution.

Dilute 1 volume of hydrochloric acid ( $\rho_{20} = 1,19$  g/ml) with 9 volumes of water.

5.2 Silver nitrate, approximately 100 g/l solution.

## 6 Apparatus

6.1 Muffle furnace, capable of being controlled at  $550 \pm 25$  °C.

6.2 Steam bath.

6.3 Filter paper, ashless, medium-fine.

6.4 Desiccator, provided with an efficient desiccant.

6.5 Analytical balance.

## 7 Procedure

### 7.1 Test portion

7.1.1 If the ash retained from the determination of total ash (see ISO 928), or that retained from the determination of water-insoluble ash (see ISO 929), is used for the determination of acid-insoluble ash, the test portion is that used for the determination of the total ash or water-insoluble ash.

7.1.2 Alternatively, take a new test portion and prepare the total ash by the procedure specified in ISO 928. It is not necessary, in this case, to cool and weigh the total ash.

### 7.2 Determination

Add to the total ash or water-insoluble ash, in the same dish in which it was prepared, 15 to 25 ml of the hydrochloric acid solution (5.1) and boil for 10 min, covering the dish with a watch glass to prevent spattering. Allow to cool and filter the contents of the dish through the ashless filter paper (6.3). Wash the filter paper with water until the washings are free from hydrochloric acid, as confirmed by the silver nitrate solution (5.2) and return it to the same dish. Evaporate carefully on the steam bath (6.3) and ignite in the muffle furnace (6.1) at 550 °C for 1 h. Cool the dish in the desiccator (6.4) and weigh it to the nearest 0,001 g. Repeat the operations of igniting for 1 h, cooling and weighing until the difference in mass between two successive weighings is less than 0,001 g. Note the lowest mass.

## 8 Expression of results

8.1 The acid insoluble ash, expressed as a percentage by mass on the dry basis, is equal to

$$(m_4 - m_0) \times \frac{100}{m_1 - m_0} \times \frac{100}{100 - H}$$

where

$m_0$  is the mass, in grams, of the empty dish;

$m_1$  is the mass, in grams, of the dish and test portion (see 7.1);

$m_4$  is the mass, in grams, of the dish and acid-insoluble ash;

$H$  is the moisture content, expressed as a percentage by mass, of the sample of spice or condiment as received.

8.2 Calculate the mean of two determinations and express the result to one decimal place.

## 9 Test report

The test report shall show the method used and the result obtained, and shall state whether the total ash or the water insoluble ash has been used. It shall mention all operating conditions not specified in this International Standard, or regarded as optional, and any circumstances that may have influenced the result.

The report shall include all details required for complete identification of the sample.

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