

# International Standard



# 939

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## Spices and condiments — Determination of moisture content — Entrainment method

*Épices — Détermination de la teneur en eau — Méthode par entraînement*

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## 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 939 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 939-1969 which had been approved by the member bodies of the following countries :

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

The member body of the following country had expressed disapproval of the document on technical grounds :

Netherlands

# Spices and condiments — Determination of moisture content — Entrainment method

## 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 or 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 an entrainment method for the determination of the moisture content of spices and condiments.

## 2 References

ISO 948, *Spices and condiments — Sampling*.

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

## 3 Definition

**moisture content** : The quantity of water, expressed as a percentage by mass, distilled and collected in accordance with the method specified in this International Standard.

## 4 Principle

Determination of the amount of water entrained by azeotropic distillation, using an organic liquid immiscible with water, and collected in a graduated tube.

## 5 Reagent

### 5.1 Toluene.

Saturate the toluene by shaking with a small quantity of water and distil. Use the distillate for the determination of the moisture.

NOTE — Different solvents are used for the determination of moisture. Unless otherwise specified in the International Standard giving specifications for the spice or condiment in question, toluene shall be the solvent used for the determination.

## 6 Apparatus

**6.1 Distillation apparatus** (a suitable form of apparatus is described in the annex and shown in the figure), comprising the following components fitted together by means of ground glass joints :

**6.1.1 Flask**, short-necked, of capacity at least 500 ml.

**6.1.2 Reflux condenser**.

**6.1.3 Receiver**, with a graduated tube, interposed between the flask and the condenser.

**6.2 Analytical balance**.

## 7 Sampling

Sample the material by the method specified in ISO 948.

## 8 Procedure

### 8.1 Preparation of apparatus

Clean the entire apparatus with a potassium dichromate-sulphuric acid cleaning solution to minimize the adherence of water droplets to the sides of the condenser and the receiver. Rinse thoroughly with water and dry completely before use.

### 8.2 Preparation of test sample

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

### 8.3 Test portion

Weigh, to the nearest 0,01 g, about 40 g of the test sample (8.2), such that the quantity of water collected will not exceed 4,5 ml.

### 8.4 Determination

Transfer quantitatively the test portion (8.3) to the distillation flask (6.1.1) with the toluene (5.1), add sufficient toluene (about 75 ml in all) to cover the sample completely and swirl to mix. Assemble the apparatus and fill the receiver (6.1.3) with the toluene by pouring it through the condenser (6.1.2) until it begins to overflow into the distillation flask. If necessary, insert a loose cotton plug in the top of the condenser or attach to it a