# INTERNATIONAL STANDARD ISO 3593

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## Starch — Determination of ash

*Amidons et fécules — Détermination des cendres*

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## FOREWORD

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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 3593 was drawn up by Technical Committee ISO/TC 93, *Starch (including derivatives and by-products)*, and circulated to the Member Bodies in October 1974.

It has been approved by the Member Bodies of the following countries :

| | | |
|---|---|---|
| Chile | Netherlands | United Kingdom |
| Czechoslovakia | Poland | U.S.S.R. |
| France | Romania | Yugoslavia |
| Germany | Spain | |
| Iran | Turkey | |

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Australia
U.S.A.





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# Starch — Determination of ash

## 0 INTRODUCTION

Native starches contain naturally small amounts of mineral matter. Converted starches may also contain variable amounts of added mineral substances.

This International Standard specifies a procedure for the conventional evaluation of both these amounts together.

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of ash in starches.

The method is applicable to native starches and to modified starches yielding not more than 2 % of ash. It is applicable neither to hydrolysis products, nor to oxidized starches nor to other products containing more than 0,2 % of chloride expressed as sodium chloride.

## 2 REFERENCE

ISO 1666, *Starch — Determination of moisture content — Oven-drying methods.*

## 3 DEFINITION

For the purpose of this International Standard, the following definition applies :

**ash :** The residue obtained after incineration of the product under the specified conditions of test.

The ash is expressed as a percentage by mass based on the product as received or on a dry basis.

## 4 PRINCIPLE

Incineration of a test portion, at a temperature of 900 °C, until complete disappearance of the carbon in the residue.

## 5 APPARATUS

Ordinary laboratory apparatus, and in particular :

**5.1 Ashing dishes,** of platinum or of any other material unaffected under the test conditions, with a flat base, a capacity of about 40 ml and a minimum usable surface area of 15 $cm^2$.

**5.2 Desiccator** provided with a thick perforated metal plate, and containing an effective desiccant such as phosphorus(V) oxide, silica gel impregnated with cobalt chloride indicator, or granular anhydrous calcium sulphate similarly treated.

**5.3 Electric furnace with ventilation,** including a device for control and adjustment of temperature to provide for incineration at a temperature of 900 ± 25 °C.

**5.4 Analytical balance.**

**5.5 Electric hot-plate or bunsen burner.**

## 6 PROCEDURE

### 6.1 Preparation of the dish

Clean the ashing dish (5.1), whether new or used, for example with boiling dilute hydrochloric acid, and rinse copiously with ordinary water and then with distilled water.

Place the dish in the furnace (5.3) and heat for 30 min at 900 ± 25 °C. Allow to cool to room temperature in the desiccator (5.2) and then weigh to the nearest 0,000 1 g.

### 6.2 Test portion

Weigh rapidly, to the nearest 0,001 g, 2 to 10 g of the product[1] according to the expected amount of ash. Distribute the material in the dish without compression.

### 6.3 Pre-incineration

Heat the dish and its contents carefully, for example by placing it at the entrance of the furnace or on an electric hot-plate or a bunsen burner (5.5) until the test portion is completely carbonized.

Ignite the emitted volatile substances in order to avoid auto-ignition, which could give rise to loss of the product by projection from the dish.

1) It is generally convenient to take at least 5 g for potato, wheat and rice starches and 10 g for maize or manioc starches.