INTERNATIONAL STANDARD 936

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Meat and meat products — Determination of ash (Reference method)

Viandes et produits à base de viande — Détermination des cendres (Methode de référence)

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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 936 was developed by Technical Committee ISO/TC 34, *Agricultural food products.*

It was submitted directly to the ISO Council, in accordance with clause 6.13.1 of the Directives for the technical work of ISO. It cancels and replaces ISO Recommendation R 936-1969, which had been approved by the member bodies of the following countries :

Australia	India	Romania
Bulgaria	Iran	South Africa, Rep. of
Canada	Ireland	Thailand
Colombia	Israel	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Egyot, Arab Rep. of	Netherlands	U.S.S.R.
France	Norway	Yugoslavia
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Hungary	Portugal	

The member bodies of the following countries had expressed disapproval of the document on technical grounds :

Germany, F.R.
New Zealand

Printed in Switzerland

Meat and meat products — Determination of ash (Reference method)

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a reference method for the determination of the ash of meat and meat products.

2 REFERENCE

ISO 3100, *Meat and meat products — Sampling.*

3 DEFINITION

ash of meat and meat products : The residue obtained after incineration at a temperature of 550 to 600 °C under the conditions specified below.

4 PRINCIPLE

Addition of magnesium acetate solution to a test portion, drying, and incineration at a temperature of 550 to 600 °C. After cooling, determination of the mass of the residue, corrected for the mass of the magnesium oxide (MgO) originating from the added magnesium acetate solution.

5 REAGENT

5.1 Magnesium acetate solution, approximately 150 g/l.

Dissolve 15 g of analytical grade anhydrous magnesium acetate [$Mg(COOCH_3)_2$] or 25 g of analytical grade magnesium acetate tetrahydrate [$Mg(COOCH_3)_2.4H_2O$] in distilled water and dilute to 100 ml.

Determine the magnesium oxide content of the solution by subjecting 1 ml of the solution to the treatment described for the test portion (see 8.3).

6 APPARATUS

Usual laboratory apparatus not otherwise specified, and the following items :

6.1 Mechanical meat mincer, laboratory size, fitted with a plate with holes of diameter not exceeding 4 mm.

6.2 Dish, of platinum or of other material unaffected by the conditions of the test, with a flat bottom of area about 15 cm^2, and inclined walls of height at least 25 mm.

6.3 One-mark pipette, capacity 1 ml.

6.4 Electrically heated muffle furnace, capable of being controlled at 550 to 600 °C.

6.5 Water bath.

6.6 Desiccator, containing an effective desiccant.

6.7 Analytical balance.

7 SAMPLE

7.1 Proceed from a representative sample of at least 200 g. See ISO 3100.

7.2 Store the sample in such a way that deterioration and change in composition are prevented.

8 PROCEDURE

8.1 Preparation of the test sample

Homogenize the sample by passing it at least twice through the meat mincer (6.1) and mixing. Keep it in a completely filled, air-tight, closed container and store it in such a way that deterioration and change in composition are prevented. Analyse the sample as soon as possible after homogenization, but always within 24 h.

8.2 Test portion

Heat the dish (6.2) for 20 min in the muffle furnace (6.4), controlled at 550 to 600 °C. Allow to cool in the desiccator (6.6) and weigh to the nearest 0,000 1 g.

Transfer about 5 g of the test sample (8.1) to the dish. Spread it out evenly and weigh to the nearest 0,000 1 g.

8.3 Determination

Add 1 ml of the magnesium acetate solution (5.1) to the dish containing the test portion (8.2) by means of the pipette (6.3) in such a way that it is distributed over the test portion as uniformly as possible.

Place the dish on the gently boiling water bath (6.5) for 30 min, then place it on an electric hot-plate or over a gas flame and heat progressively until the substance carbonizes.

Transfer the dish to the muffle furnace (6.4), controlled at 550 to 600 °C, avoiding losses during the initial combustion by introducing the dish gradually and removing it temporarily, if necessary, to allow any violent combustion to subside.

After the furnace has again reached a temperature of 550 to 600 °C, leave the test portion at this temperature for at least 30 min.

Transfer the dish from the muffle furnace to the desiccator (6.6). Allow to cool to room temperature and weigh to the nearest 0,000 1 g. If the ash contains black particles, reject the test. If it does not, return the dish to the muffle furnace for 30 min, then transfer it to the desiccator. Allow to cool to room temperature and weigh to the nearest 0,000 1 g. The successive weighings should not differ by more than 0,001 g.

Carry out two determinations on test portions taken from the same test sample.

9 EXPRESSION OF RESULTS

9.1 Method of calculation and formula

The ash of the sample, expressed as a percentage by mass, is equal to

$$(m_2 - m_0 - m_3) \times \frac{100}{m_1 - m_0}$$

where

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

m_1 is the mass, in grams, of the dish containing the test portion;

m_2 is the mass, in grams, of the dish and the residue after ashing;

m_3 is the mass, in grams, of magnesium oxide (MgO) originating from the magnesium acetate solution added.

Take as the result the arithmetic mean of the results of the two determinations, if the requirement for repeatability (see 9.2) is satisfied.

Report the result to the nearest 0,02 g of ash per 100 g of sample.

9.2 Repeatability

The difference between the results of two determinations carried out almost simultaneously or in rapid succession by the same analyst should not be greater than 0,10 g of ash per 100 g of sample.

10 TEST REPORT

The test report shall show the method used and the result obtained. It shall also mention any operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the result.

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