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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 936

MEAT AND MEAT PRODUCTS

DETERMINATION OF ASH

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BRIEF HISTORY

The ISO Recommendation R 936, *Meat and meat products – Determination of ash,* was drawn up by Technical Committee ISO/TC 34, *Agricultural food products,* the Secretariat of which is held by the Magyar Szabványügyi Hivatal (MSZH).

Work on this question by the Technical Committee led, in 1966, to the adoption of a Draft ISO Recommendation.

In April 1967, this Draft ISO Recommendation (No. 1232) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

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

Two Member Bodies opposed the approval of the Draft :

Germany
New Zealand

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in January 1969, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 936 January 1969

MEAT AND MEAT PRODUCTS

DETERMINATION OF ASH

1. SCOPE

This ISO Recommendation describes a reference method for the determination of the ash of meat and meat products.

2. DEFINITION

By *ash* is meant the residue obtained after incineration at a temperature of 550 to 600 °C under the conditions described.

3. PRINCIPLE

Addition of magnesium acetate solution, drying on a water bath and incineration in a muffle furnace 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.

4. REAGENT

Magnesium acetate solution, approximately 150 g/l. Dissolve 15 g of anhydrous magnesium acetate of analytical grade $Mg(COOCH_3)_2$ or 25 g of hydrated magnesium acetate of analytical grade $Mg(COOCH_3)_2.4H_2O$ 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 clause 7.3).

5. APPARATUS

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

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

5.2 *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.

5.3 *Pipette,* 1 ml, calibrated.

5.4 *Electrically heated drying oven,* with temperature control.

5.5 *Electrically heated muffle furnace,* with temperature control.

5.6 *Water bath.*

5.7 *Desiccator,* containing an effective desiccant.

5.8 *Analytical balance.*

6. SAMPLE

6.1 Proceed from a representative sample of at least 200 g, (see ISO Recommendation R ...*, *Meat and meat products – Sampling).*

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

7. PROCEDURE

7.1 Preparation of sample

Make the sample homogeneous by passing it at least twice through the meat mincer (5.1) 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, but in any case within 24 hours.

7.2 Test portion

Heat the dish (5.2) for 20 minutes in the muffle furnace (5.5) at 550 to 600 °C. Allow to cool in the desiccator (5.7) and weigh to the nearest 0.0001 g.

Transfer about 5 g of the prepared sample to the dish. Spread it out evenly and weigh to the nearest 0.001 g.

7.3 Determination

Add 1 ml of the magnesium acetate solution (4) to the dish (5.2) by means of the pipette (5.3) 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 (5.6) for 30 minutes, then place it on an electric hotplate or over a gas flame and heat progressively until the substance carbonizes.

Transfer the dish to the muffle furnace controlled at a temperature within the range 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 minutes.

Transfer the dish from the muffle furnace to the desiccator (5.7). Allow to cool to room temperature and weigh to the nearest 0.0001 g. If the ash contains black particles, reject the test. It it does not, put the dish again into the muffle furnace for 30 minutes, then transfer it to the desiccator. Allow to cool to room temperature and weigh to the nearest 0.0001 g. The successive weighings should not differ by more than 0.001 g.

Carry out two determinations on the same prepared sample.

* In course of preparation.

8. EXPRESSION OF RESULTS

8.1 Method of calculation and formula

The percentage, by mass, of ash yielded by the sample is equal to

$$(M_2 - M_0 - M_3) \times \frac{100}{M_1 - M_0}$$

where

M_0 is the mass, in grammes, of the dish,

M_1 is the mass, in grammes, of the dish containing the test portion,

M_2 is the mass, in grammes, of the dish and the residue after ashing,

M_3 is the mass, in grammes, 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 conditions of repeatability are satisfied.

Report the result to the nearest 0.02 g of ash per 100 g of sample.

8.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst should not be greater than 0.10 g of ash per 100 g of sample.

9. TEST REPORT

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

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