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ISO RECOMMENDATION

R 1444

MEAT AND MEAT PRODUCTS

DETERMINATION OF FREE FAT CONTENT

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BRIEF HISTORY

The ISO Recommendation R 1444, *Meat and meat products – Determination of free fat content*, 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 led to the adoption of Draft ISO Recommendation No. 1444, which was circulated to all the ISO Member Bodies for enquiry in February 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Iran	South Africa, Rep. of
Bulgaria	Israel	Spain
Chile	Korea, Rep. of	Thailand
Czechoslovakia	Netherlands	Turkey
France	Norway	U.A.R.
Germany	Poland	United Kingdom
Hungary	Portugal	
India	Romania	

The following Member Body opposed the approval of the Draft :

New Zealand

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

ISO Recommendation R 1444 November 1970

MEAT AND MEAT PRODUCTS

DETERMINATION OF FREE FAT CONTENT

1. SCOPE

This ISO Recommendation describes a reference method for the determination of the free fat content of meat and meat products by means of extraction.

With the procedure described, only the extractable amount of the fat of meat and meat products is determined.

2. DEFINITION

By the *free fat* of meat and meat products is meant the fat extracted under the operating conditions described. The free fat content is expressed as a percentage by mass.

3. PRINCIPLE

Extraction, by means of *n*-hexane or light petroleum, of the dried residue obtained as in the determination of the moisture content*, removal of the solvent by evaporation, drying and weighing of the extract.

4. REAGENTS

4.1 *Extraction solvent, n*-hexane or, alternatively, light petroleum distilling between 40 and 60 °C, and having a bromine value less than 1. For either solvent, the residue on complete evaporation should not exceed 0.002 g per 100 ml.

4.2 *Boiling chips.*

5. APPARATUS

Usual laboratory equipment 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 *Extraction thimble,* made of filter paper and defatted.

* See ISO Recommendation R 1442, *Meat and meat products – Determination of moisture content.*

5.3 *Cotton wool,* defatted.

5.4 *Extraction apparatus,* continuous or semi-continuous, for example the Soxhlet type.

5.5 *Sand bath* or *water bath,* electrically heated, or similar suitable apparatus.

5.6 *Drying oven,* electrically heated, adjusted to operate at 103 ± 2 °C.

5.7 *Desiccator,* containing an efficient desiccant.

5.8 *Analytical balance.*

6. SAMPLE

6.1 Start 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

Render the sample uniform 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 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

Dry a known mass, 5 to 10 g weighed to the nearest 0.001 g, of the prepared sample, by the procedure described in ISO Recommendation R 1442, *Meat and meat products – Determination of moisture content.* If desired, the dried test portion from the determination of moisture content may be used for the determination of free fat.

NOTE. – It is also possible to take 3 to 5 g of the sample and dry it with a quantity of anhydrous sodium sulphate (about 30 to 40 g) such that the product can readily be removed from the vessel used for grinding.

7.3 Determination

Dry the flask of the extraction apparatus (5.4), containing some boiling chips (4.2), for 1 hour at 103 ± 2 °C in the drying oven (5.6). Allow the flask to cool to room temperature in the desiccator (5.7) and weigh to the nearest 0.001 g. Transfer the dried test portion (see clause 7.2), quantitatively from the dish to the extraction thimble (5.2). Remove the last traces of the dried test portion from the dish, using cotton wool (5.3) moistened with the extraction solvent (4.1), and also transfer this cotton wool to the thimble. Place the thimble in the extraction tube of the apparatus. Pour the extraction solvent into the flask of the extraction apparatus; the amount of solvent should be at least one and a half to two times the capacity of the extraction tube of the apparatus. Fit the flask to the extraction apparatus. Heat the flask for several hours on the sand bath, water bath or other apparatus (5.5), according to the extraction rate and the apparatus used**.

After extraction, take the flask containing the liquid from the extraction apparatus and distil off the solvent, using, for example, the sand bath, water bath or other apparatus. Evaporate the last traces of the solvent using air blowing if desired.

Dry the flask for 1 hour in the drying oven regulated at 103 ± 2 °C and, after allowing it to cool to room temperature in the desiccator, weigh to the nearest 0.001 g. Repeat the operations of heating, cooling and weighing until the results of two successive weighings do not differ by more than 0.1 % of the test portion.

Verify the completion of the extraction by taking a second extraction flask and extracting for a further period of 1 hour with a fresh portion of the solvent. The increase in mass should not exceed 0.1 % of the test portion.

Carry out two determinations on the same prepared sample

* In preparation.

** This period should be at least 6 hours.