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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 934

ANIMAL FATS

DETERMINATION OF WATER
(ENTRAINMENT DISTILLATION METHOD)

1st EDITION
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BRIEF HISTORY

The ISO Recommendation R 934, *Animal fats – Determination of water (Entrainment distillation method),* was drawn up by Technical Committee ISO/TC 34, *Agricultural food products,* the Secretariat of which is held by the Magyar Szabvanyügyi Hivatal (MSZH).

Work on this question led to the adoption of a Draft ISO Recommendation.

In April 1967, this Draft ISO Recommendation (No. 1225) 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	Iraq	Romania
Bulgaria	Ireland	South Africa, Rep. of
Colombia	Israel	Thailand
Czechoslovakia	Korea, Rep. of	Turkey
France	Netherlands	U.A.R.
Greece	New Zealand	United Kingdom
Hungary	Norway	U.S.S.R.
India	Poland	Yugoslavia
Iran	Portugal	

No Member Body opposed the approval of the Draft.

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 934 January 1969

ANIMAL FATS

DETERMINATION OF WATER (ENTRAINMENT DISTILLATION METHOD)

1. SCOPE

1.1 This ISO Recommendation describes a method for the determination, by entrainment distillation, of water in animal fats intended for human and animal consumption.

1.2 **Field of application**

This method is applicable to animal fats containing 1 % or more of water.

2. DEFINITION

By *water* is meant the amount of water distilled and collected according to the method described.

3. PRINCIPLE

Determination of the amount of water carried over by distillation, with the aid of an organic liquid not miscible with water, and collected in a graduated tube.

4. REAGENT

Commercial xylene, containing isomers or mixtures of isomers in varying proportions.

5. APPARATUS

5.1 *Distillation apparatus* (see Figure), comprising the following components fitted together by means of ground glass joints :

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

5.1.2 *Reflux condenser.*

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

NOTE. – In order to remove all traces of fat from the graduated tube of the receiver and the inside of the condenser tube, clean the apparatus, for example with a chromic/sulphuric acid mixture, and wash successively with distilled water and with acetone. Then dry the apparatus in a current of air without heat.

5.2 *Boiling regulators*, for example pumice-stone fragments.

5.3 *Analytical balance.*

6. SAMPLE

Proceed from a representative sample of at least 250 g. See ISO Recommendation R . . .,* *Animal fats – Sampling.*

* In course of preparation.

7. PROCEDURE

7.1 Preparation of sample

Mix the sample until it is as uniform as possible.

7.2 Test portion

Weigh, to the nearest 0.01 g, 20 to 100 g of fat according to the expected water content, into the flask (5.1.1).

7.3 Determination

Add from 100 to 300 ml of xylene (according to the mass of the test portion) and boiling regulators (5.2). The volume of fat and xylene together should not exceed one half of the total volume of the flask.

Assemble the distillation apparatus (5.1).

Heat the flask gradually until the xylene boils, The water carried over is collected in the graduated tube of the receiver.

When the distilled solvent is clear and no more water separates from it, stop heating and allow to stand long enough for the water to collect completely and until there is no emulsified zone. If drops of water adhere to the walls of the tube or the condenser, use suitable means for causing these to combine with the water collected in the tube. Should froth form during boiling of the xylene, the addition of 1 to 2 g of dry oleic acid or liquid paraffin is recommended.

Carry out two determinations on the same prepared sample.

8. EXPRESSION OF RESULTS

8.1 Method of calculation and formula

The water content, as a percentage by mass, is equal to

$$\frac{V \times 100}{M}$$

where

V is the volume, in millilitres, of water collected in the graduated tube;

M is the mass, in grammes, of the test portion.

It is assumed that the density of water is exactly 1 g/ml, within the precision of the determination.

Take as the result, the arithmetic mean of the two determinations, if the requirements of repeatability are satisfied.

8.2 Repeatability

The difference between the results of duplicate determinations carried out simultaneously or in rapid succession by the same analyst, using the same mass of the test portion, should not exceed 0.1 ml of water.

NOTE. – The repeatability, expressed as a percentage of water, will depend on the mass of the test portion.

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

Dimensions in millimetres

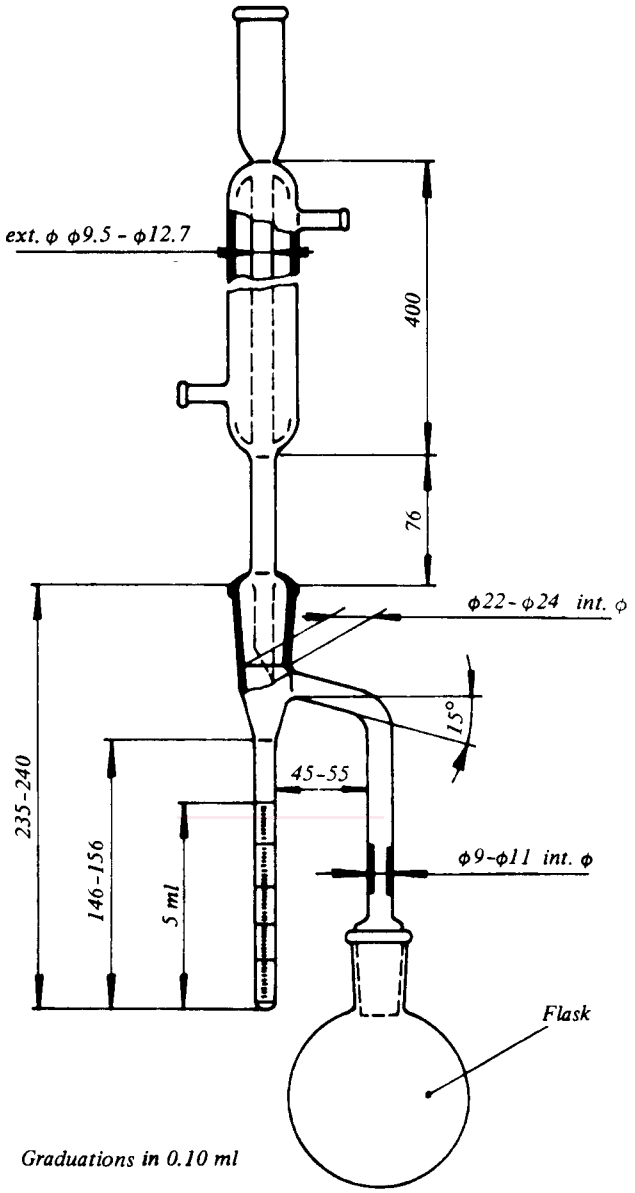

FIGURE – **Distillation apparatus**