UDC 664.32 : 620.1

Ref. No. : ISO/R 935-1969(E)

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 935

ANIMAL FATS

DETERMINATION OF SOLIDIFICATION POINT OF FATTY ACIDS (TITRE)

1st EDITION
January 1969

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 935, *Animal fats – Determination of solidification point of fatty acids (Titre)*, 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 by the Technical Committee led, in 1966, to the adoption of a Draft ISO Recommendation.

In April 1967, this Draft ISO Recommendation (No. 1226) 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 :

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

One Member Body opposed the approval of the Draft :

Netherlands

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 935 January 1969

ANIMAL FATS

DETERMINATION OF SOLIDIFICATION POINT OF FATTY ACIDS (TITRE)

1. SCOPE

1.1 This ISO Recommendation describes a method for the determination of the solidification point (titre) of fatty acids obtained from animal fats intended for human or animal consumption.

1.2 **Field of application**

This method is applicable to water-insoluble fatty acids with a solidification point of 30 °C or above.

2. DEFINITION

By the *solidification point of fatty acids* is meant the temperature, determined as the maximum of a temporary temperature rise during the cooling of the melted fatty acids by the method described. If the latent heat is not sufficient to cause a rise in temperature, the temporary interruption of the cooling process is considered as the solidification point.

3. PRINCIPLE

Determination of the highest temperature during the temporary temperature rise, or the interruption of the cooling process, when the melted fatty acids are cooled.

4. APPARATUS

4.1 *Glass test tube*, length 12 cm, internal diameter exactly 2.75 cm.

4.2 *Flat circular cork*, having a central hole just big enough to support the tube.

4.3 *Wide-necked jar*, height 13 cm, external diameter 10 cm, into which the cork and the tube are fitted.

4.4 *Thermometer*, accurately calibrated, graduated in 0.1 or 0.2 °C, with a scale covering all or part of the range from 30 to 70 °C, according to the sample to be tested. The bulb is 2 cm long and 0.6 cm in diameter.

4.5 *Water-bath*.

5. SAMPLE

Proceed from a representative sample of at least 100 g of the animal fat. See ISO Recommendation R . . . ,* *Animal fats – Sampling.*

6. PREPARATION OF WATER-INSOLUBLE FATTY ACIDS

Prepare the water-insoluble fatty acids from the sample of animal fat by the method described in ISO Recommendation R . . . ,* *Animal fats – Preparation of water-insoluble fatty acids.*

7. PROCEDURE

7.1 Test portion

Use 40 to 50 g of the sample of fatty acids for the determination.

7.2 Determination

Bring the temperature inside the jar to 20 to 25 °C below that of the expected titre by immersing the jar in the heated or cooled water bath (4.5).

Melt the fatty acids at a temperature about 10 °C above the titre expected.

Pour the fatty acids into the glass test tube (4.1), brought to the temperature of the wide-necked jar (4.3), to a height of about 5.5 cm and support the tube in the flat circular cork (4.2) so that a length of about 3 cm projects above it.

Suspend the thermometer (4.4) carefully in the centre of the tube so that the base of the bulb is 1 cm from the bottom of the tube.

The mercury column falls rapidly at first and then more slowly. Simultaneously, the fatty acids crystallize, first at the bottom of the tube and then gradually covering the base of the thermometer bulb.

When the mercury column appears to be stationary during four observations made at 5 second intervals, stir the fatty acids with a rapid, circular movement of the thermometer three times to the right and three times to the left, thus breaking up the crystals formed.

Replace the thermometer immediately in the centre of the tube and take further readings.

The mercury column, which fell sharply during the agitation, now rises again and attains a maximum, or does not alter its value, before falling again. This maximum or standstill is the solidification point or titre.

Carry out two determinations on the same prepared sample.

8. EXPRESSION OF RESULTS

8.1 Take as the result the arithmetic mean of the two determinations, if the requirements of repeatibility are satisfied. If the difference is greater, repeat the determination until two results differing by not more than 0.2 °C are obtained.

8.2 Repeatability

The difference between the results of duplicate determinations carried out simultaneously or in rapid succession by the same analyst should not exceed 0.2 °C.

* In preparation