
INTERNATIONAL STANDARD



2446

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Milk — Determination of fat content (Routine method)

Lait — Détermination de la teneur en matière grasse (Méthode de routine)

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

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 2446 was drawn up by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the Member Bodies in June 1975.

It has been approved by the Member Bodies of the following countries :

Austria	Hungary	Poland
Belgium*	India	Romania
Canada	Iran	South Africa, Rep. of
Czechoslovakia	Ireland	Spain
Egypt, Arab Rep. of	Mexico	Thailand
France	Netherlands	Turkey
Germany	New Zealand	United Kingdom
Ghana	Peru	Yugoslavia

* Belgium approved the International Standard with the exception of items b) and c) and notes 1 and 2 of clause 1, and of clauses 12 and 13.

The Member Body of the following country expressed disapproval of the document on technical grounds :

Israel

Milk — Determination of fat content (Routine method)

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a routine method (the Gerber method) for the determination of the fat content of milk and includes guidance on the determination of the appropriate capacity of the milk pipette and on the determination of the corrections to apply to the results if the milk is not of average fat content (see 6.1). The procedure for checking the capacity of the milk pipette is described in the annex.

The method is applicable to liquid milk, whole or partially skimmed, raw or pasteurized. With modifications, details or which are given, it is also applicable to

- a) milk containing certain preservatives (see clause 11);
- b) milk that has undergone the process of homogenization, in particular sterilized milk and ultra heat-treated (UHT) milk (see clause 12);
- c) skimmed milk (see clause 13).

NOTES

1 The result obtained by the procedure described in clause 12 (modified procedure for milk that has undergone the process of homogenization) may be slightly high. Further study to obtain a more reliable procedure for such milk is in progress.

2 Work is in progress on a procedure for testing skimmed milk with a special 0 to 0,5 % fat butyrometer. This butyrometer will be more suitable than the 0 to 4 % fat butyrometer currently used for skimmed milk (see clause 13).

2 REFERENCES

ISO/R 488, *Butyrometers for the determination of the fat content of milk by the Gerber method*.

ISO/R 707, *Milk and milk products — Sampling*.

ISO/R 1211, *Milk — Determination of fat content (Reference method)*.

NOTE — ISO/R 1211 is being revised. The revised version will specify a reference Röse-Gottlieb method applicable to certain milk products as well as to liquid milk.

3 DEFINITION

Gerber method: An empirical procedure which gives a value for fat content in grams of fat per 100 g of milk or per 100 ml of milk — depending on the capacity of the milk

pipette used — that is the same as, or has a known relationship to, the value obtained by the reference method (ISO/R 1211).

NOTE — Periodic comparative determinations by the Gerber method and by the reference method should be made to ensure that the Gerber method satisfies the above definition (see 10.4).

4 PRINCIPLE

Separation of the fat of the milk in a butyrometer by centrifuging after dissolving the protein with sulphuric acid, the separation being aided by the addition of a small quantity of amyl alcohol. The butyrometer is graduated to give a direct reading of fat content.

5 REAGENTS

5.1 Sulphuric acid

5.1.1 Requirements

The sulphuric acid shall have a density at 20 °C of $1,816 \pm 0,004$ g/ml, which corresponds to approximately $90,4 \pm 0,8$ % (m/m) H_2SO_4 . The acid shall be colourless, or not darker in colour than pale amber, shall be free from suspended matter and shall be found suitable for use when tested as specified in 5.1.2.

5.1.2 Suitability test

5.1.2.1 PURPOSE OF TEST

A sulphuric acid may satisfy the specific requirements of 5.1.1 for density and appearance and yet be unsuitable for the Gerber method. Therefore, check the suitability of the acid before use by means of the following comparative test with a standard sulphuric acid.

5.1.2.2 STANDARD SULPHURIC ACID

Add sulphuric acid of analytical reagent quality (for example 98 % (m/m) H_2SO_4 , ρ_{20} 1,84 g/ml) to distilled water, or water of at least equal purity, to obtain a solution with a density within the range specified in 5.1.1.

NOTE — Approximately 1 l of standard sulphuric acid is obtained by adding 908 ml of 98 % (m/m) sulphuric acid to 160 ml of water, checking the density of the diluted acid with a suitable hydrometer and adjusting the density, if necessary, by adding a small volume of water or 98 % (m/m) acid.