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Milk and milk products - Determination of milk fat purity by gas chromatographic analysis of triglycerides (Reference method) (ISO 17678:2010)

I.S. EN ISO 17678:2010

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English Version

**Milk and milk products - Determination of milk fat purity by gas chromatographic analysis of triglycerides (Reference method)
(ISO 17678:2010)**

Lait et produits laitiers - Détermination de la pureté des matières grasses laitières par analyse chromatographique en phase gazeuse des triglycérides (Méthode de référence)
(ISO 17678:2010)

Milch und Milcherzeugnisse - Bestimmung der Reinheit des Milchfetts durch gaschromatographische Triglyceridanalyse (Referenzverfahren) (ISO 17678:2010)

This European Standard was approved by CEN on 13 February 2010.

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Contents

Page

Foreword.....3

Foreword

This document (EN ISO 17678:2010) has been prepared by Technical Committee ISO/TC 34 "Food products" in collaboration with Technical Committee CEN/TC 302 "Milk and milk products - Methods of sampling and analysis", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2010, and conflicting national standards shall be withdrawn at the latest by August 2010.

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**Milk and milk products — Determination
of milk fat purity by gas chromatographic
analysis of triglycerides (Reference
method)**

*Lait et produits laitiers — Détermination de la pureté des matières
grasses laitières par analyse chromatographique en phase gazeuse des
triglycérides (Méthode de référence)*



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Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	2
3 Terms and definitions	2
4 Principle	2
5 Reagents	2
6 Apparatus	3
7 Sampling	4
8 Procedure	4
8.1 Preparation of test samples	4
8.2 Preparation of fat sample solution	5
8.3 Chromatographic triglyceride determination	5
9 Integration, evaluation and control of the analytical performance	8
10 Calculation and expression of results	9
10.1 Triglyceride composition	9
10.2 S-values	10
10.3 Detection of foreign fat	10
11 Precision	11
11.1 Interlaboratory test	11
11.2 Repeatability	11
11.3 Reproducibility	12
12 Test report	12
Annex A (normative) Preparation of the packed column	13
Annex B (informative) Quantification of the foreign fat content	17
Annex C (informative) Uncertainty of measurement	19
Annex D (informative) Interlaboratory test	20
Bibliography	22

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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ISO 17678|IDF 202 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*, and the International Dairy Federation (IDF). It is being published jointly by ISO and IDF.

Foreword

IDF (the International Dairy Federation) is a non-profit organization representing the dairy sector worldwide. IDF membership comprises National Committees in every member country as well as regional dairy associations having signed a formal agreement on cooperation with IDF. All members of IDF have the right to be represented on the IDF Standing Committees carrying out the technical work. IDF collaborates with ISO in the development of standard methods of analysis and sampling for milk and milk products.

The main task of Standing Committees is to prepare International Standards. Draft International Standards adopted by the Standing Committees are circulated to the National Committees for endorsement prior to publication as an International Standard. Publication as an International Standard requires approval by at least 50 % of the IDF National Committees casting a vote.

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ISO 17678|IDF 202 was prepared by the International Dairy Federation (IDF) and Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 5, *Milk and milk products*. It is being published jointly by IDF and ISO.

All work was carried out by the Joint ISO-IDF Project Group on *Foreign fats* of the Standing Committee on *Analytical methods for composition* under the aegis of its project leader, Dr J. Molquentin (DE).

Milk and milk products — Determination of milk fat purity by gas chromatographic analysis of triglycerides (Reference method)

1 Scope

This International Standard specifies a reference method for the determination of milk fat purity using gas chromatographic analysis of triglycerides. Both vegetable fats and animal fats such as beef tallow and lard can be detected. By using defined triglyceride equations, the integrity of milk fat is determined.

Basically, the method applies to bulk milk, or products made thereof, irrespective of feeding, breed or lactation conditions. In particular, the method is applicable to fat extracted from milk products purporting to contain pure milk fat with unchanged composition, such as butter, cream, milk, and milk powder.

However, under the circumstances listed hereafter, a false positive result can be obtained. Hence, the method is not applicable to milk fat:

- a) obtained from bovine milk other than cow's milk;
- b) obtained from single cows;
- c) obtained from cows which received an exceptionally high feeding of pure vegetable oils such as rapeseed oil;
- d) obtained from colostrum;
- e) subjected to technological treatment such as removal of cholesterol or fractionation;
- f) obtained from skim milk or buttermilk;
- g) extracted by using the Gerber, Weibull–Berntrop or Schmid–Bondzynski–Ratzlaff methods, or that has been isolated using detergents (e.g. the Bureau of Dairy Industries method).

With the extraction methods specified in g), substantial quantities of partial glycerides or phospholipids can pass into the fat phase. Consequently, the scope of this International Standard excludes certain products and particularly cheese, whose ripening process can also affect the fat composition to such a degree that a false positive result is obtained.

NOTE 1 In nature, butyric (*n*-butanoic) acid (C4) occurs exclusively in milk fat and enables quantitative estimations of low to moderate amounts of milk fat in vegetable and animal fats to be made. However, due to the large variation of C4, whose approximate content ranges from 3,1 % mass fraction to 3,8 % mass fraction, it is difficult to provide qualitative and quantitative information for foreign fat to pure milk fat ratios of up to 20 % mass fraction (see Reference [11]).

NOTE 2 In practice, quantitative results cannot be derived from the sterol content of vegetable fats, because they depend on production and processing conditions. Furthermore, the qualitative determination of foreign fat using sterols is ambiguous.

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