

codex alimentarius commission



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD
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ORGANIZATION



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Agenda Item 7(a)

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON MILK AND MILK PRODUCTS

Eighth Session

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METHODS OF ANALYSIS AND SAMPLING FOR MILK PRODUCTS

Report by IDF/ISO International Working Group on Methods of Analysis and Sampling on list of methods required in the standards currently being elaborated by CCMMP and review of the current methods of analysis and sampling for milk and milk products including recommendations on updates to the lists

1 INTRODUCTION

1. During its 7th Session the Codex Committee on Milk and Milk Products agreed to request information on methods of analysis and sampling required in standards for milk and milk products through a circular letter (ref. CL 2006/8-MMP with a deadline for reply by 30 September 2007). It also agreed to request the IDF/ISO Working Group on Methods of Analysis and Sampling:

- i) To prepare a list of methods required in the standards currently being elaborated by the Committee;
- ii) To review the current methods of analysis and sampling for milk and milk products and provide recommendations on updates to the lists.

for consideration at the 8th Session of CCMMP in 2008. (ref. Codex ALINORM 06/29/11, para. 167)

2 LIST OF METHODS REQUIRED IN THE STANDARDS CURRENTLY BEING ELABORATED BY CCMMP

2. CCMMP is currently working on a Proposed Draft Standard for Processed Cheese (at Step 3) as well as on a Proposed draft Amendment to the Codex Standard for Fermented Milks pertaining to Composite Fermented Milk Drinks (at Step 3). The IDF/ISO Working Group on Methods of Analysis and Sampling has reviewed the compositional requirements in the current draft standards and presents its findings and recommendations with regard to a list of methods required in Appendix 1 to this report.

3 CURRENT METHODS OF ANALYSIS AND SAMPLING FOR MILK AND MILK PRODUCTS AND RECOMMENDATIONS ON UPDATES TO THE LISTS

3. The IDF/ISO Working Group on Methods of Analysis and Sampling has reviewed current methods of analysis and sampling for milk and milk products (Codex STAN 234-1999, revision of 2006) and provides its recommendations on updates to the list in Appendix 2 to this report. It is to be noted that the review comprised only those analytical methods that were developed by ISO and/or IDF.

4. The IDF/ISO Working Group on Methods of Analysis and Sampling has also reviewed comments of Codex members countries received in response to CL 2006/8-MMP and would like to share its analysis and recommendations for consideration by CCMMP.

Analysis of comments of Codex member countries in response to CL 2006/8-MMP and recommendations of the IDF/ISO Working Group on Methods of Analysis and Sampling

5. The following comments relate to Codex ALINORM 06/29/11 - CL 2006/8 PART B -METHOD OF ANALYSIS AND SAMPLING FOR MILK PRODUCTS, Appendix XXVI.

ARGENTINA

6. Argentina appreciates the opportunity to provide comments on this document.

Part A – Methods of analysis and sampling for standards currently being elaborated

General Comments

7. Argentina suggests that the “Milk solids-not-fat (MSNF)” be translated as “*extracto seco no graso*” in the Spanish version of the document, as it is the term normally used in this language. Thus, the acronym “*ESML*” should be replaced by “*ESNG*”.

8. Furthermore, the acronym “*GES*” should be replaced by the acronym “*GLES*”.

Blend of milk and vegetable fat

9. Argentina suggests that the requirement for total fat be changed to 8%, as established in CODEX STAN 252-2006.

10. In the three mentioned standards, we suggest that the bracketed word “*(descremada)*” be added after “*desnatada*” in the Spanish version, as appearing in the Spanish version of the standards.

11. Where the scope of the method(s) does not include the type of product for which it/they is/are proposed, although we agree that the method(s) is/are highly likely to be applicable, we suggest indicating that an interlab validation study will be needed to demonstrate the applicability.

Emmental (C-9)

12. In the column about the principle for determination of dry matter, we suggest that the phrase “Flame atomic absorption” be translated as “*Espectroscopia de absorción atómica con llama*” in the Spanish version. We also suggest that “a dry ashing” be translated as “*vía seca*” in the column about comments.

Cream cheese (C-31)

13. In the column about requirements of the method for determination of dry matter, we suggest that the phrase “restricted by the MMFB” be translated as “*restringido por la humedad del producto desgrasado (HPD)*”.

Dairy spreads

14. We suggest using the name of the product as appearing in the “Codex Standard for Dairy Fat Spreads” and transcribing only the product requirements established in this standard: “The milk fat content shall be no less than 10% and less than 80% (m/m) and shall represent at least 2/3 of the dry matter.” (CODEX STAN 253-2006).

Analysis and Recommendations of the IDF/ISO Working Group on Methods of Analysis and Sampling

⇒ Argentina is correct with its comments relating to the compositional requirement on minimum total fat of 8% mass fraction in the adopted Codex Standard for Blend of Sweetened Condensed Skimmed Milk and Vegetable Fat (Codex STAN 252-2006). The confusion has arisen from a discrepancy between Appendix V and Appendix XXVI of ALINORM 06/29/11 where the respective provision was correctly stated in Appendix V as “Minimum total fat 8% (m/m) (note that ISO/IDF methods use the term: ‘mass fraction’)” while it was incorrectly stated in Appendix XXVI as “Total fat \geq [7-8]% (m/m)”. No action is required by CCMMP since this was simply an editorial mistake in Codex ALINORM 06/29/11, Appendix XXVI, which has no further consequence. The compositional requirement mentioned is not part of CODEX STAN 234-1999.

⇒ The IDF/ISO Working Group on Methods of Analysis and Sampling takes note of the request to perform interlaboratory validation trials in order to demonstrate the applicability of various

analytical methods listed to check compliance of compositional requirements laid down in Codex standards 250, 251 and 252. Furthermore, we would like to draw attention to the fact that, for the reason mentioned by Argentina, the Codex Committee on Methods of Analysis and Sampling has endorsed at its 27th Session (in May 2006) the methods concerned as Type IV methods instead of Type I methods as had been proposed by CCMMP at its 7th Session (in March/April 2006).

⇒ Argentina is also correct with its comment relating to the name of the product as appearing in the Codex Standard for Dairy Fat Spreads (CODEX STAN 253-2006). No action is required by CCMMP since this has been already corrected in the current version of CODEX STAN 234 (ref. Appendix 2 to this report).

Following the comments from Argentina, the IDF/ISO Working Group on Methods of Analysis and Sampling recommends that:

⇒ The Codex Secretariat should check the correct translation of terms and acronyms

THAILAND

Part A Methods of analysis and sampling for standards currently being elaborated

15. Thailand proposes adding sucrose under provision and its methods in the table. Consequently the estimation for MSNF should be amended to cover sucrose content because the calculation of MSNF needs to be taken into account sucrose content.

16. The amended table would then read as follows:

Commodity	Provision	Requirement	Method	Principle	Comments	Type	Status
Blend of Sweetened condensed skimmed milk and vegetable fat (at step 8)	Total fat	>=[7-8%] m/m	IDF 13C:1987 ISO 1737:1999	Gravimetry (Röse- Gottlieb)	The scope of the method does not include this type of product. However, it is expected that the method is applicable.	I	E 22 CCMAS (milk fat in sweetened condensed milk)
	Sucrose		IDF 35:2004 ISO 2911:2004				
	MSNF	>=20% m/m	IDF 15B:1991 ISO 6734:1989 IDF 13C:1987 ISO 1737:1999	Calculation from total solids content, fat content and <u>sucrose content</u> Gravimetry (Röse- Gottlieb)		I	E 23 CCMAS (solids in sweetened condensed milk) E 22 CCMAS (milk fat in sweetened condensed milk)
	Milk protein in MSNF*	>=34% m/m in the MSNF	IDF 20-part1 or part 2:2001 ISO 8963-part 1 or part 2:2001	Titrimetry (Kjeldahl)	The scope of the method does not include this type of product. However, it is expected that the method is applicable.	I	E 23 CCMAS (sweetened condensed milk)

Analysis and recommendations of the IDF/ISO Working Group on Methods of Analysis and Sampling

Thailand suggests to include a reference to the International Standard ISO 2911|IDF 35:2004; Sweetened condensed milk - Determination of sucrose content - Polarimetric method in CODEX STAN 234 in order to verify the compositional requirement relating to Permitted Ingredients / sugar, which is generally considered to be sucrose, in the Codex Standard for Blend of Sweetened Condensed Skimmed Milk and Vegetable Fat (CODEX STAN 252-2006)

The IDF/ISO Working Group on Methods of Analysis and Sampling confirms that sucrose is certainly part of the SNF (note that ISO/IDF methods often use the equivalent term: NFS = non-fat solids). However, classifying it as MSNF would infer it was present in the original milk, which is not correct.

The proposed joint International Standard ISO 2911|IDF 35:2004 specifies a polarimetric method for the determination of sucrose in sweetened condensed milk. The method is applicable to sweetened condensed milk of normal composition prepared from whole, partially skimmed or skimmed milk and sucrose only and containing no altered sucrose.

Although the scope of the method does not include the type of product as laid down in CODEX STAN 252-2006, the IDF/ISO Working Group on Methods of Analysis and Sampling believes that the method is applicable.

Following the comments from Thailand, the IDF/ISO Working Group on Methods of Analysis and Sampling recommends that:

⇒ CCMMP refers the proposal for inclusion of joint ISO-IDF International Standard ISO 2911|IDF 35:2004 in CODEX STAN 234 as proposed but with a comment “The scope of the method does not include this type of product. However, it is expected that the method is applicable” for endorsement to CCMAS (ref. Appendix 2 to this report).

UNITED KINGDOM

17. The methods of analysis specify various colorimetric procedures for metals such as copper and lead. These should be updated to include AAS and ICP-OES methods (with performance characteristics specified). It may be that there is still a need for the colorimetric methods in some areas of the world where more modern instrumental methods are not routinely available (and the old methods do work well) but metals are not method dependent (as are some of the parameters in milk product analysis) and the full spectrum of available techniques should be represented in the Codex methods.

Analysis and recommendations of the IDF/ISO Working Group on Methods of Analysis and Sampling

The IDF/ISO Working Group on Methods of Analysis and Sampling supports the UK assessment that a wider range of available techniques for metals should be represented in the Codex methods.

The method for determining the lead content in milk and milk products is ISO/TS 6733 | IDF/RM 133:2006 (included in Appendix 2 of Codex STAN 234). This method is applicable for freeze dried evaporated milk, processed cheese, whey powder, whole milk powder, caseinate, freeze dried evaporated milk, freeze dried cheese, skim milk powder.

IDF/ISO have initiated a project “Method with multi elements with graphite furnace AAS, ICP-OES and ICP-MS”.

Should CCMMP decide to endorse the UK request, IDF/ISO would appreciate receiving contact details of laboratories that are willing to actively participate in the project.

Following the comments from United Kingdom, the IDF/ISO Working Group on Methods of Analysis and Sampling recommends that:

*- CCMMP should consider the need for up-dated methods as suggested by the UK and advise the IDF/ISO Working Group on Methods of Analysis and Sampling accordingly
IDF/ISO would appreciate receiving contact details of laboratories that are willing to actively participate in the project.*

Appendix 1

Methods required for Proposed Draft Standard for Processed Cheese (at Step 3)

Commodity	Provision	Requirement	Method ¹	Principle	Comments	Type	Status
Processed Cheese	Dry matter (DM)	≥ 25%	ISO 5534 IDF 4:2004	Gravimetry Drying at 102°C	This method may not be applicable to processed cheese preparations as defined in CODEX STAN A-8(c)-1978	I	
	Protein	Declare milk protein content where consumers would be misled if omitted	ISO/TS 17837 IDF/RM 25:2007	Titrimetry (Kjeldahl)	This method measures total protein and does not specifically measure milk protein.	I	
	Milk fat in dry matter (FDM)	< 75%	ISO 1735 IDF 5:2004 Or ISO 8262-3 IDF 124-3:2005	Gravimetry (Schmid-Bondzynski-Ratzlaff) Gravimetry (Weibull-Berntrop)	Use ISO 1735 IDF 5:2004 unless product is not covered by the scope of the method. In that case, use Part 3 of ISO 8262 IDF 124:2005. These methods measure total fat and do not specifically measure milk fat. When fat is measured by ISO 5534 IDF 4:2004 or part 3 of ISO 8262 IDF 124:2005, FDM may be obtained by calculation.	I	E 22 CCMAS (SBR method only)

Method required for Draft Codex provisions for Fermented Milk Drinks (at Step 3)

Commodity	Provision	Requirement	Method	Principle	Comments	Type	Status
Fermented Milk Drinks Provisions	Dairy ingredients	=>40%			No IDF/ISO method available		

¹ Joint ISO-IDF International Standards published by ISO.

Appendix 2

Current methods of analysis and sampling for milk and milk products - extract from Codex STAN 234-1999 (revision of 2006) with highlighted changes as recommended by the IDF/ISO Working Group on Methods of Analysis and Sampling

Milk and Milk Products				
Milk products	Iron	NMKL 139 (1991) (Codex general method)	Atomic absorption spectrophotometry	II
Milk products	Iron	<i>IDF 103A:1986 / ISO 6732:1985²</i> IDF Standard 103A:1986 ISO 6732:1985	Photometry (bathophenanthroline)	IV
Milk products (products not completely soluble in ammonia)	<i>Milk fat</i>	<i>ISO 8262-3/IDF 124-3:2005³</i> IDF 124-3 ISO 8262-3:2005	Gravimetry (Weibull-Berntrop)	I
Blend of evaporated skimmed milk and vegetable fat	Total fat	IDF 13C:1987 / ISO 1737:1999	Gravimetry (Röse-Gottlieb)	IV
Blend of evaporated skimmed milk and vegetable fat	Milk solids-not-fat ⁴ (MSNF)	IDF 21B:1987 / ISO 6731:1989 and IDF 13C:1987 / ISO 1737:1999	Calculation from total solids content and fat contents Gravimetry (Röse-Gottlieb)	IV
Blend of evaporated skimmed milk and vegetable fat	Milk protein in MSNF ⁴	<i>ISO 8968-1/2/IDF 20-1/2:2001</i> IDF 20-part 1 or 2:2001 ISO 8968-part 1 or 2:2001	Titrimetry (Kjeldahl)	IV
Reduced fat blend of evaporated skimmed milk and vegetable fat	Total fat	IDF 13C:1987 / ISO 1737: 1999	Gravimetry (Röse-Gottlieb)	IV
Reduced fat blend of evaporated skimmed milk and vegetable fat	MSNF ⁴	IDF 21B:1987 / ISO 6731:1989 <i>and</i> IDF 13C:1987 / ISO 1737:1999	Calculation from total solids and fat contents <i>Gravimetry (Röse-Gottlieb)</i>	IV
Reduced fat blend of Evaporated skimmed milk and vegetable fat	Milk protein in MSNF ⁴	<i>ISO 8968-1/2/IDF 20-1/2:2001</i> IDF 20-1 or 2:2001 ISO 8968-1 or 2:2001	Titrimetry (Kjeldahl)	IV
Blend of skimmed milk and vegetable fat in powdered form	Total fat	IDF 9C:1987 / ISO 1736:2000	Gravimetry (Röse-Gottlieb)	IV

² The format "IDF XXX:YEAR/ISO YYY:YEAR" denotes Standards that have been published separately by IDF and ISO International, but which are technically identical

³ The format "ISO YYY/IDF XXX:YEAR" denotes joint ISO-IDF International Standards published by ISO.

⁴ Milk total solids and MSNF content include water of crystallization of lactose

Blend of skimmed milk and vegetable fat in powdered form	Water ⁵	ISO 5537/IDF 26:2004 IDF 26:2004 ISO 5537:2004	Gravimetry, drying at 87°C	IV
Blend of skimmed milk and vegetable fat in powdered form	Milk protein in MSNF ⁴	ISO 8968-1/2/IDF 20-1/2:2001 IDF 20-part 1 or part 2:2001 ISO 8968-part 1 or part 2:2001	Titrimetry (Kjeldahl)	IV
Reduced fat blend of skimmed milk powder and vegetable fat in powdered form	Total fat	IDF 9C:1987 / ISO 1736:2000	Gravimetry (Röse-Gottlieb)	IV
Reduced fat blend of skimmed milk powder and vegetable fat in powdered form	Water ⁵	ISO 5537/IDF 26:2004 IDF 26:2004 ISO 5537:2004	Gravimetry, drying at 87°C	IV
Reduced fat blend of skimmed milk powder and vegetable fat in powdered form	Milk protein in MSNF ⁴	ISO 8968-1/2/IDF 20-1/2:2001 IDF 20-part 1 or part 2:2001 ISO 8968-part 1 or part 2:2001	Titrimetry (Kjeldahl)	IV
Blend of sweetened condensed skimmed milk and vegetable fat	Total fat	IDF 13C:1987 / ISO 1737:1999	Gravimetry (Röse-Gottlieb)	IV
Blend of sweetened condensed skimmed milk and vegetable fat	Sucrose	ISO 2911/IDF 35:2004 IDF 35:2004 ISO 2911	Polarimetry	IV TBE CCMAS
Blend of sweetened condensed skimmed milk and vegetable fat	Milk solids-not-fat (MSNF) ⁴	IDF 15B:1991 / ISO 6734:1989 <i>and</i> IDF 13C:1987 / ISO 1737:1999	Calculation from total solids content and fat contents Gravimetry (Röse-Gottlieb)	IV
Blend of sweetened condensed skimmed milk and vegetable fat	Milk protein in MSNF ⁴	ISO 8968-1/2/IDF 20-1/2:2001 IDF 20-part 1 or part 2:2001 ISO 8968-part 1 or part 2:2001	Titrimetry (Kjeldahl)	IV
Reduced fat blend of sweetened condensed skimmed milk and vegetable fat	Total fat <= 8% m/m >= 1% m/m	IDF 13C:1987 / ISO 1737: 1999	Gravimetry (Röse-Gottlieb)	IV
Reduced fat blend of sweetened condensed skimmed milk and vegetable fat	MSNF ⁴ >= 20% m/m	IDF 15B:1991 / ISO 6734:1989 <i>and</i> IDF 13:1987 / ISO 1737:1999	Calculation from total solids and fat contents Gravimetry (Röse-Gottlieb)	IV
Reduced fat blend of sweetened condensed skimmed milk and vegetable fat	Milk protein in MSNF ⁴	ISO 8968-1/2/IDF 20-1/2:2001 IDF 20-part 1 or part 2:2001 ISO 8968-part 1 or part 2:2001	Titrimetry (Kjeldahl)	IV

⁵ Water content excluding the crystallized water bound to lactose (in fact to read moisture content)

Butter	Copper	IDF Standard 76A:1980 / ISO 5738:1980 / AOAC 960.40	Photometry, diethyldithiocarbamate	II
Butter	Lead	AOAC 972.25 (Codex general method)	Atomic absorption spectrophotometry	II
Butter	<i>MSNF</i>	<i>ISO 3727-2/IDF 80-2:2001</i> IDF 80-2 ISO 3727-2:2001	Gravimetry	I
Butter	<i>Milk fat</i>	<i>ISO 3727-3/IDF 80-3:2003 or</i> IDF 80-3 ISO 3727-3:2003 <i>ISO 17189/IDF 194:2003</i>	Gravimetry <i>Calculation from water⁵ and SNF contents</i> <i>Gravimetry</i> <i>Direct determination of fat using solvent extraction Gravimetry</i>	I
Butter	Salt	<i>ISO 1738/IDF 12:2004</i> IDF 12 ISO 1738:2004	Titrimetry (Mohr: determination of chloride, expressed as sodium chloride)	II
Butter	Salt	<i>ISO 15648/IDF 179:2004</i> IDF 179 ISO 15648:2004	Potentiometry (determination of chloride, expressed as sodium chloride)	III
Butter	Vegetable fat	<i>ISO 17678/IDF 202⁶</i> ISO 17670 / IDF 202	Gas liquid chromatography	II
Butter	Vegetable fat	IDF Standard 32:1965 / ISO 3595:1976 (confirmed 1996)/ AOAC 955.34A	Phytosteryl acetate test	III
Butter	Water ⁵	<i>ISO 3727-1/IDF 80-1:2001</i> IDF 80 ISO 3727-1:2001	Gravimetry	I
Cheese	Citric acid	<i>ISO/TS 2963/IDF/RM 34:2006</i> IDF RM 34 ISO TS 2963:2006	Enzymatic method	II
Cheese	Citric acid	ISO 2963:1997 AOAC 976.15	Photometry	III
Cheese	<i>Milk fat</i>	<i>ISO 1735/IDF 5:2004</i> IDF 5 ISO 1735:2004	Gravimetry (Schmid-Bondzynski-Ratslaff)	I

⁶ This concerns a joint Draft International Standard (DIS)

Cheese	Moisture	ISO 5534 IDF 4:2004 IDF Standard 4A:1982 ISO 5534:1985	Gravimetry, drying at 102 °C	I
Cheese (and cheese rind)	Natamycin	IDF Standard 140A:1992 / ISO 9223:1991	Molecular absorption spectrophotometry & HPLC after extraction	II
Cheeses, individual	<i>Milk fat</i> in dry matter	ISO 1735 IDF 5:2004 IDF 5:2004 ISO 1735:2004	Gravimetry after solvent extraction	I
Cheeses, individual	Dry matter (Total solids)	ISO 5534 IDF 4: 2004	Gravimetry, drying at 102°C	I
Cheeses in brine	<i>Milk fat</i> in dry matter (FDM)	ISO 1735 IDF 5:2004 IDF 5 ISO 1735:2004	Gravimetry (Schmid-Bondzynski-Ratslaff)	I
Cottage cheese	Fat-free dry matter	ISO 5534 IDF 4:2004 IDF 5:2004 ISO 1735:2004	Gravimetry, drying at 102°C Calculation from dry matter and fat contents	IV
	<i>Milk fat</i>	ISO 1735 IDF 5:2004 IDF 5 ISO 1735:2004	Gravimetry (Schmid-Bondzynski-Ratzlaff)	IV
Cottage cheese		ISO 8262-3 IDF 124-3:2005 IDF 124-3:2005 ISO 8262-3:2005	Gravimetry (Weibull-Berntrop)	
Cottage cheese	Milk fat in dry matter	ISO 8262-3 IDF 124-3:2005 IDF 126A:1988 ISO 8262-3:1987	Gravimetry (Weibull-Berntrop)	I
Cheese, unripened including fresh cheese	Protein	ISO 8968-1 IDF 20-1:2001 IDF Standard 20B:1993 AOAC 991.20-23 ISO 8968 Part I	Titrimetry, Kjeldahl	I
Cream and prepared creams	Milk protein	ISO 8968-1 IDF 20-1:2001 AOAC 991.20	Titrimetry (Kjeldahl)	I
Cream	<i>Milk fat</i>	IDF Standard 16C:1987 / ISO 2450:1999	Gravimetry (Röse-Gottlieb)	I
Cream	Solids	IDF Standard 21B:1987 / ISO 6731:1989	Gravimetry (drying at 102°C)	I
Creams lowered in <i>milk fat</i> content	<i>Milk fat</i>	IDF Standard 16C:1987 / ISO 2450:1999 AOAC 995.19	Gravimetry	I
Creams, whipped creams and fermented creams	<i>MSNF</i>	ISO 3727-2 IDF 80-2:2001 IDF Standard 80:1977 ISO 3727:1977 AOAC 920.116	Gravimetry	I

Cream cheese	Dry matter	ISO 2234/IDF 4:2004 IDF 4:2004 ISO 5534:2004	Gravimetry drying at 102°C	IV
Cream cheese	Moisture on fat free basis	ISO 5534/IDF 4:2004 IDF 4:2004 ISO 5534:2004 and ISO 1735/IDF 5:2004 IDF 5:2004 ISO 1735:2004	Calculation from fat content and moisture content	IV
Dairy fat spreads	Total fat	ISO 17189/IDF 194:2003 IDF 194:2003 ISO 17189:2003	Gravimetry Direct determination of fat using solvent extraction	I
Dairy fat spreads	Vegetable fat	IDF 54:1970 / ISO 3594:1976 IDF 32:1965 / ISO 3595:1976	Gas liquid chromatography Phytosterol acetate test	II III
Edible casein products	Acids, free	ISO 5547/IDF 91:2007 IDF Standard 91:1979 ISO 5547:1978	Titrimetry (aqueous extract)	IV
Edible casein products	Ash (including P ₂ O ₅)	ISO 5545/IDF 90:2007 IDF Standard 90:1979 ISO 5545:1978	Furnace, 825°C	IV
Edible Casein Products	Casein in protein	ISO 17997-1/IDF 29-1:2004 IDF Standard 29:1964	Titrimetry, Kjeldahl	I
Edible casein products	Copper	AOAC 985.35	Atomic absorption spectrophotometry	II
Edible casein products	Copper	ISO 5738/IDF 76:2004 IDF 76 ISO 5738:2004	Colorimetry (diethyldithiocarbamate)	III
Edible casein products	Lactose	ISO 5548/IDF 106:2004 IDF 106 ISO 5548:2004	Photometry (phenol and H ₂ SO ₄)	IV
Edible casein products	Lead	AOAC 972.25 (Codex general method)	Atomic absorption spectrophotometry	II
Edible casein products	Lead	AOAC 982.23 (Codex general method)	Anodic stripping voltammetry	III
Edible casein products	Lead	ISO/TS 6733/IDF/RM 133:2006 IDF RM 133 ISO TS 6733: 2006	Spectrophotometry (1,5-diphenylthiocarbazone)	III
Edible casein products	Lead	NMKL 139 (1991) (Codex general method)	Atomic absorption spectrophotometry	III

Edible casein products	<i>Milk fat</i>	ISO 5543/IDF 127:2004 ISO 5543 IDF 127: 2004	Gravimetry (Schmid-Bondzynski-Ratslaff)	I
Edible casein products	Moisture	ISO 5550/IDF 78:2006 IDF 78 ISO 5550:2006	Gravimetry (drying at 102°C)	I
Edible casein products	pH	IDF Standard 115A:1989 / ISO 5546:1979	Electrometry	IV
Edible casein products	Protein (total N x 6.38 in dry matter)	IDF Standard 92:1979 / ISO 5549:1978	Titrimetry, Kjeldahl digestion	IV
Edible casein products	Sediment (scorched particles)	ISO 5739/IDF 107:2003 IDF 107 ISO 5739:2003	Visual comparison with standard disks, after filtration	IV
Emmental	Calcium ≥ 800 mg/100g	ISO 8070 IDF 119: 2007 ⁷	Flame atomic absorption	IV
Evaporated milks	<i>Milk fat</i>	IDF Standard 13C: 1987 / ISO 1737:1999	Gravimetry (Röse-Gottlieb)	I
Evaporated milks	Protein	ISO 8968-1/IDF 20-1:2001 AOAC 945.48H / AOAC 991.20 IDF 20B:1993	Kjeldahl, titrimetry	I
Evaporated milks	Solids, total	IDF Standard 21B:1987 / ISO 6731:1989	Gravimetry (drying at 102°C)	I
Fermented milks	Protein	ISO 8968-1 IDF 20-1:2001 AOAC 991.20	Titrimetry (Kjeldahl)	I
Fermented milks	Milk fat	IDF ID:1996 / ISO 1211:1999 / ISO 1211:1999 IDF 1D:1996 AOAC 905.02	Gravimetry	I
Fermented milks	Lactic acid (total acidity expressed as lactic acid)	IDF 150:1991 / ISO 11869:1997	Potentiometry, titration to pH 8.30	I
	Microorganisms constituting the starter culture	IDF 149A:1997 (Annex A)	Colony count at 25°C, 30°C, 37°C and 45°C according to the starter organism in question	IV
Milk powders and cream powders	<i>Milk fat</i>	IDF Standard 9C:1987 / ISO 1736:2000	Gravimetry (Röse-Gottlieb)	I
Milk powders and cream powders	Protein (in <i>MSNF</i>)	ISO 8968-1/IDF 20-1:2001 IDF 20-1 ISO 8968-1:2001	Titrimetry, Kjeldahl digestion	I

⁷ ~~Draft International Standard~~

Milk powders and cream powders	Scorched particles	ISO 5739/IDF 107:2003 IDF 107 ISO 5739:2003	Visual comparison with standard disks, after filtration	IV
Milk powders and cream powders	Solubility	ISO 8156/IDF 129:2005 IDF 129 ISO 8156:2005	Centrifugation	I
Milk powders and cream powders	Acidity, titratable	ISO Standard 86:1981 / ISO 6091:1980	Titrimetry, titration to pH 8.4	I
Milk powders and cream powders	Water ⁵	ISO 5537/IDF 26:2004⁸ IDF 26 ISO 5537:2004	Gravimetry (drying at 102°C)	IV
<i>Milk fat</i> products	Antioxidants (phenolic)	ISO Standard 165:1993	Reversed phase gradient liquid chromatography	II
<i>Milk fat</i> Products	Copper	ISO 5738/IDF 76:2004 / IDF Standard 76A:1980/ISO 5738:1980/AOAC 960.40	Photometry, diethyldithiocarbamate	II
<i>Milk fat</i> products	Fatty acids, free (expressed as oleic acid)	ISO 1740/IDF 6:2004 IDF 6 ISO 1740:2004	Titrimetry	I
<i>Milk fat</i> products	<i>Milk fat</i>	ISO Standard 24:1964	Gravimetry (calculation from solids-not-fat and water content)	IV
<i>Milk fat</i> Products	Peroxide value (expressed as meq. of oxygen/kg fat)	AOAC 965.33	Titrimetry	I
<i>Milk fat</i> products	Vegetable fat (sterols)	ISO Standard 54:1979 / ISO 3594:1976	Gas liquid chromatography	II
<i>Milk fat</i> products	Vegetable fat	ISO Standard 32:1965 / ISO 3595:1976	Phytosterol acetate test	III
<i>Milk fat</i> products	Water ⁵	ISO 5536/IDF 23:2002 IDF 23 ISO 5536:2002	Titrimetry (Karl Fischer)	II
<i>Milk fat</i> products (anhydrous <i>milk fat</i>)	Peroxide value	AOAC 965.33	Titrimetry	I
Milk products obtained from fermented milks heat-treated after fermentation	Protein	ISO 8968-1/IDF 20-1:2001 IDF Standard 20B:1993 ISO 8968 Part 1/AOAC 991.20-23	Titrimetry (Kjeldahl)	I
Mozzarella	<i>Milk fat</i> in dry matter – with high moisture	ISO 1735/IDF 5:2004 IDF 5:2004 ISO 1735:2004	Gravimetry after solvent extraction	IV
Mozzarella	<i>Milk fat</i> in dry matter – with low moisture	ISO 1735/IDF 5:2004 IDF 5:2004 ISO 1735:2004	Gravimetry after solvent extraction	IV

⁸ The replacing method has only been validated for milk powders, not for cream *powders*

Processed cheese products	Citric acid	ISO/TS 2963/IDF/RM 34:2006 IDF RM 34 ISO TS 2963:2006	Enzymatic method	II
Processed cheese products	Citric acid	AOAC 976.15	Photometry	III
Processed cheese products	<i>Milk fat</i>	ISO 1735/IDF 5:2004 IDF 5:2004 ISO 1735:2004	Gravimetry (Schmid- Bondzynski-Ratzlaff)	I
Processed cheese products	Phosphate, added (expressed as phosphorus)	IDF Standard 51B:1991	Calculation	IV
Processed cheese products	Phosphorus	ISO/TS 2963/IDF/RM 34:2006 IDF Standard 33C: 1987 ISO 2962:1984	Enzymatic method Spectrophotometry (molybdate-ascorbic acid)	II
Processed cheese products	Salt	ISO 5943/IDF 88:2004 IDF 88 ISO 5943:2004	Potentiometry (determination of chloride, expressed as sodium chloride)	II
Sweetened condensed milk	<i>Milk fat</i>	IDF Standard 13C: 1987 / ISO 1737:1999	Gravimetry (Röse-Gottlieb)	I
Sweetened and Condensed Milks	Protein	ISO 8968-1/IDF 20-1:2001 / AOAC 945.48H / AOAC 991.20 IDF 20B:1993	Kjeldahl, titrimetry	I
Sweetened Condensed Milks	Solids	IDF Standard 15B:1991 / ISO 6734:1989	Gravimetry, drying at 102 °C	I
Whey Cheese	Dry matter (for denomination)	ISO 2920/IDF 58:2004 IDF 58 ISO 2920:2004	Gravimetry, drying at 88 °C	I
Whey cheeses by concentration	Dry matter (total solids)	ISO 2920/IDF 58:2004 IDF 58 ISO 2920:2004	Gravimetry, drying at 88 °C	I
Whey cheeses by coagulation	Dry matter (total solids)	ISO 5534/IDF 4:2004 IDF 4:2004 ISO 5534:2004	Gravimetry, Drying at 102°C	IV
Whey cheese	Fat on the dry basis	IDF 59 A:1986 / ISO 1854:1999 and ISO 2920/IDF 58:2004 IDF 58:2004 ISO 2920:2004	Calculation from fat content and dry matter content	I
Whey cheese	<i>Milk fat</i> (in dry matter)	IDF standard 59A:1986 / ISO 1854:1999	Gravimetry (Röse-Gottlieb)	I
Whey cheeses including whey cheeses by concentration	Total fat	IDF 59A:1986 / ISO 1854:1999	Gravimetry (Röse Gottlieb)	I

Whey cheeses by coagulation	Total fat	ISO 1735/IDF 5:2004 IDF 5:2004 ISO 1735:2004	Gravimetry (Schmid-Bondzynski-Ratzlaff)	I
Creamed whey cheese	Fat on the dry basis	IDF 59 A: 1986 / ISO 1854: 1999 and ISO 2920/IDF 58:2004 IDF 58:2004 ISO 2920:2004	Calculation from fat content and dry matter content	I
Skimmed whey cheese	Fat on the dry basis	IDF 59 A:1986 / ISO 1854:1999 and ISO 2920/IDF 58:2004 IDF 58:2004 ISO 2920:2004	Calculation from fat content and dry matter content	I
Whey powders	Ash	ISO 5545/IDF 90:2007 IDF Standard 90:1979 ISO 5545:1978	Furnace, 825°C	IV
Whey powders	Copper	AOAC 985.35	Atomic absorption spectrophotometry	II
Whey powders	Copper	ISO 5738/IDF 76:2004 IDF 76 ISO 5738:2004	Photometry (diethyldiethiocarbamate)	III
Whey Powders	Lactose	ISO 5765-1/2/IDF 79-1/2:2002 IDF 79B:1991	Enzymatic method: Part 1 - Glucose moiety or Part 2 - Galactose moiety glucose moiety (method A), galactose moiety (method B)	II
Whey powders	Lead	AOAC 972.25 (Codex general method)	Atomic absorption spectrophotometry	II
Whey powders	Milk fat	IDF Standard 9C:1987 / ISO 1736:2000	Gravimetry (Röse-Gottlieb)	I
Whey powders	Milk protein	ISO 8968-1 IDF 20-1:2001 / AOAC 991.20	Titrimetry (modified Kjeldahl)	I
Whey powders	Moisture, "Free"	ISO 2920/IDF 58:2004 IDF 58 ISO 2920:2004	Gravimetry (drying at 88 °C ±2°C)	IV
Whey powders	Protein (total N x 6.38)	IDF Standard 92:1979 / ISO 5549:1978	Titrimetry, Kjeldahl digestion	IV
Whey powders	Water (not including water of crystallization of lactose)	ISO 5537/IDF 26:2004 / IDF 26A:1993 AOAC 927.05	Gravimetry	I

Yoghurt products	<i>Lactobacillus bulgaricus</i> & <i>Streptococcus thermophilus</i>	ISO 7889/IDF 117:2003 IDF 117 ISO 7889:2003	Colony count at 37°C	I
Yoghurt products	<i>Lactobacillus bulgaricus</i> & <i>Streptococcus thermophilus</i>	ISO 9232/IDF 146:2003 IDF 146 ISO 9232:2003	Test for identification	I
Yoghurt products	Solids, Total	ISO 13580/IDF 151:2005 IDF 151 ISO 13580:2005	Gravimetry (drying at 102°C)	I
Yoghurt	<i>Streptococcus thermophilus</i> & <i>Lactobacillus delbrueckii</i> subsp. <i>Bulgaricus</i> ≥ 10 ⁷ cfu/g	ISO 7889 IDF 117:2003	Colony count at 37°C	I
Yoghurt	<i>Streptococcus thermophilus</i> & <i>Lactobacillus delbrueckii</i> subsp. <i>bulgaricus</i> ≥ 10 ⁷ cfu/g	ISO 9232 IDF 146:2003	Test for identification: morphological, cultural and biochemical characteristics	I