



Technews

**National Dairy Development Board
For Efficient Dairy Plant Operation**

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CODEX STANDARDS FOR DAIRY INDUSTRY

This bulletin includes technical and latest development on products, systems, techniques etc. reported in journals, companies' leaflets and books and based on studies and experience. The technical information on different issues is on different areas of plant operation. It is hoped that the information contained herein will be useful to readers.

The theme of information in this issue is **Codex Standards for Dairy Industry**. It may be understood that the information given here is by no means complete.

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1. INTRODUCTION

The international food standards / guidelines / codes formulated by the Codex Alimentarius Commission (CAC) are, as accepted by the World Trade Organization (WTO), the reference points for the global trade of food commodities. In due course of time, the national food standards, most if not all, are likely to be harmonized with those of Codex, and the food industry would be required to comply with those standards/ guidelines/codes even for foods produced for domestic consumption. Obviously, this applies to the dairy industry as well.

On several aspects, Codex standards are higher than the current national standards. In some areas, our present dairy operations do not fully comply with the Codex guidelines/codes. The dairy industry needs to take earnest actions in the direction of ensuring that their operations comply with Codex

Guidelines / codes and their products meet Codex standards.

However, a large section of the dairy industry does not appear to have adequate information and knowledge about Codex standards/ guidelines/codes relevant to dairy industry. This issue of Technews provides information on them as approved by the CAC so far. Codex has standards on dairy products, additives, contaminants, nutrition; guidelines and codes of practices for different operations and requirements. Since texts of them all will run in hundreds of pages, it is not possible to provide them here. Therefore, a list of all the relevant Codex standards/ guidelines and codes is provided with website addresses from where their full texts can be obtained. Extracts of some important decision are also presented. Full texts are published by the CAC in book form also as Codex Alimentarius in several volumes.

2. RELEVANT STANDARDS/ GUIDELINES/CODES

The list of all the Codex standards / guidelines / codes relevant to dairy industry is provided in the Annex. Full texts of these documents can be downloaded from the website addresses provided suitably therein. In the table, the information is provided area-wise.

The product standards include details on raw-materials, ingredients, composition, food additives, contaminants, hygienic requirements, labelling requirements, and methods of sampling and analysis.

3. HYGIENE REQUIREMENTS

A high importance has been laid on implementing good hygienic practices in every stage of food chain to control microbiological contamination.

The 'Recommended International Code of Practice: General Principles of Food Hygiene' is an important document which provides guidelines for good hygienic practices throughout the food

chain, including primary production. The document recommends the application of the hazard analysis and critical control point (HACCP) system in the entire food chain, wherever applicable, and includes its details in an annex.

Specific 'Code of Hygienic Practice for Production of Milk and Milk Production' is also being developed by the Codex.

4. CHEMICAL CONTAMINANTS

The main emphasis of Codex standards is ensuring food safety. Therefore, Codex has set maximum limits (MLs) for such chemical contaminants that may cause health risk. These include heavy metals, mycotoxins, pesticides residues and veterinary drugs residues. Tables 1 and 2 provide Codex recommended MLs for pesticides residues and veterinary drugs residues in milk, respectively.

Table 1: Maximum residue limits (MRLs) of pesticides in milk (unless otherwise mentioned) set by Codex

Contaminant	Recommended MRL, mg/kg (ppm)	Remarks
Abamectin	0.005	
Acephate	0.10	
Aldicarb	0.01	
Aldrin and dieldrin	0.006	E, F
Amitraz	0.01	V
Anilazine	0.01	
Azocyclotin	0.05	V, MP
Bendiocarb	0.05	V
Bentazone	0.05	
Bifenthrin	0.05	F
Bitertanol	0.05	
Carbaryl	0.10	MP
Carbendazim	0.10	
Carbofuran	0.05	
Chlordane	0.002	E, F
Chlorpyrifos	0.01	

Contaminant	Recommended MRL, mg/kg (ppm)	Remarks
Chlorpyrifos-methyl	0.01	F
Clofentezine	0.01	
Cyfluthrin	0.01	F, V
Cyhexatin	0.05	V, MP
Cypermethrin	0.05	F, V
Cyromazine	0.01	V
DDT	0.02	E, F
Deltamethrin	0.02	F, V
Diazinon	0.02	F, V
Dichlorvos	0.02	
Dicofol	0.10	F
Diflubenzuron	0.05	
Dimethipin	0.02	
Diquat	0.01	
Dithiocarbamates	0.05	
Endosulfan	0.004	F
Ethephon	0.05	
Fenbuconazole	0.05	
Fenbutatin oxide	0.05	
Fenitrothion	0.002	E, F
Fenpropathrin	0.10	F
Fenpropimorph	0.01	
Fenthion	0.05	F, V
Fenvalerate	0.10	F
Flumethrin	0.05	
Flusilazole	0.01	
Glyphosate	0.10	
Heptachlor	0.006	E, F
Lindane	0.01	F, V
Mecarbam	0.01	
Methamidophos	0.01	

Contaminant	Recommended MRL, mg/kg (ppm)	Remarks
Methidathion	0.001	F
Methiocarb	0.05	
Methomyl	0.02	
Methoprene	0.05	F, V
Monocrotophos	0.002	
	0.02	MP only
Myclobutanil	0.01	
Paraquat	0.01	
Penconazole	0.01	
Permethrin	0.10	F
Phorate	0.05	
Pirimicarb	0.05	
Pirimiphos-methyl	0.05	F
Prochloraz	0.10	
Profenofos	0.01	
Propargite	0.10	F
Propiconazole	0.01	
Propoxur	0.05	
Tebuconazole	0.01	
Terbufos	0.01	
Thiabendazole	0.10	V
Triadimefon	0.05	
Triadimenol	0.01	
Triazophos	0.01	
Vinclozolin	0.05	

E = extraneous residue, F = the residue is fat soluble,
V = additional veterinary use, MP = for milk products also

Codex has also developed and aflatoxin, and is codes of practices to control developing one to control lead chemical contaminants in food in food.

Table 2: Maximum residue limits (MRLs) of veterinary drugs in milk set by Codex

Contaminant	Recommended MRL, µg/kg (ppb)
Albendazole	100
Benzylpenicillin/Procaine benzylpenicillin	4
Ceftiofur	100
Dihydrostreptomycin/Streptomycin	200
Diminazene	150
Febantel/Fenbendazole/Oxfendazole	100
Gentamicin	200
Imidocarb	50
Isometamidium	100
Neomycin	500
Oxytetracycline	100
Spectinomycin	200
Spiramycin	200
Sulfadimidine	25
Tilmicosin	50

The Codex recommendations dairy products are given in Table 3.

Table 3: Codex maximum limits for heavy metals in milk & milk products

Product	ML, mg/kg (ppm)		
	Lead	Copper	Iron
Milk*	0.02	-	-
Milkfat	0.10	-	-
Butter	0.05	-	-
Milkfat products (almost free from water & fat-not-solids)	*	0.05 ⁺	0.2 ⁺

Product	ML, mg/kg (ppm)		
	Lead	Copper	Iron
Whey powders	1.00	5.00	
- spray-dried			20.0
- roller-dried			50.0
Edible casein products	-	5.00 ⁺	
- spray-dried			20.0 ⁺
- roller-dried			50.0 ⁺
* For dairy products, an appropriate concentration factor should apply (i.e., the times quantity of milk needed to produce the product).			
⁺ voluntary only.			

The Codex ML for Aflatoxin M₁ in milk is 0.5 µg/kg (ppb).

Annex: Codex standards relevant to dairy industry

A. VOLUME 1A : Codex Standards for General Requirements

Internet: http://www.codexalimentarius.net/STANDARD/volume1a/vol1a_E.htm

Sl. No.	Title	Standard number
1	Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods (except sections for livestock production)	CAC/GL 032-1999
2	Recommended International Code of Practice for the Operation of Irradiation Facilities Used for the Treatment of Foods	CAC/RCP 019-1979
3	Definitions for the purpose of the Codex Alimentarius	XOT00-1997
4	General Principles for the Use of Food Additives	XOT01-1972
5	Principle Relating to Carry-Over of Food Additives into Foods	XOT02-1987
6	Inventory of Processing Aids	XOT03-1989
7	Class Names and the International Numbering System for Food Additives	XOT04-1999

Sl. No.	Title	Standard number
8	List of Advisory Specifications for Food Additives	XOT05-1999
9	Guidelines for Simple Evaluation of Food Additive Intake (Never published except in the Codex CD-ROM, FAO, 1999)	CAC/GL 003-1989
10	Guidelines for the Development of Equivalence Agreements regarding Food Import and Export Inspection and Certification Systems	CAC/GL 034-1999
11	General Standard for Irradiated Foods	CODEX STAN 106-1983
12	General Standard for the Labelling of Food Additives when Sold as Such	CODEX STAN 107-1981
13	Principles for Food Import and Export Inspection and Certification	CAC/GL 020-1995
14	Code of Ethics for International Trade in Food	CAC/RCP 020-1979
15	Code of Practice for the Reduction of Aflatoxin B ₁ in Raw Materials and Supplemental Feedingstuffs for Milk-Producing Animals	CAC/RCP 045-1997
16	General Requirements for Natural Flavourings	CAC/GL 029-1987
17	Guideline Levels for Vinyl Chloride Monomer and Acrylonitrile in Food and Packaging Material	CAC/GL 006-1991
18	Guidelines for the Design, Operation, Assessment and Accreditation of Food Import and Export Inspection and Certification Systems	CAC/GL 026-1997
19	Guidelines on Nutrition Labelling	CAC/GL 002-1985
20	Guidelines for Use of Nutrition Claims	CAC/GL 023-1997
21	Guidelines for the Exchange of Information between Countries on Rejections of Imported Food	CAC/GL 025-1997

Sl. No.	Title	Standard number
22	General Standard for the Labelling of Prepackaged Foods	CODEX STAN 001-1985
23	Standard for Food Grade Salt	CODEX STAN 150-1985
24	Amendment to the Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods (Table 1: Substances used in Soil Fertilizing and Conditioning)	ALINORM 01/22A, Appendix III*
25	Amendments to the Codex General Standard for Food Additives: Table 3 (Additives with an Acceptable Daily Intake of "Not Specified")	ALINORM 01/12A, Appendix V*
26	Revisions to the Codex International Numbering System for Food Additives	ALINORM 01/12, Appendix VII*
27	Codex Advisory Specifications for the Identity and Purity of Food Additives	ALINORM 01/12, Appendix IX* and ALINORM 01/12A, Appendix VIII*
28	General Standard for Food Additives: Table 1 (Additives Permitted for Use Under Specified Conditions or Individual Food Items)	ALINORM 99/12A, APPENDIX II**
28	Codex General Standard for Food Additives: Draft Additions to Table 1	ALINORM 01/12, Appendix III*
29	Guidelines for Generic Official Certificate Formats and the Production and Issuance of Certificates	ALINORM 01/30A, Appendix II*

Sl. No.	Title	Standard number
30	General Codex Methods for the Detection of Irradiated Foods	ALINORM 01/23, Appendix IV Part III*
31	Codex Guidelines for the Production, Processing, Labelling and Marketing of Organically Produced Foods: Draft Provisions concerning Livestock Production	ALINORM 01/22, Appendix II*
32	Codex General Standard for Food Additives: Draft Additions to Table 1	ALINORM 01/12A, Appendix II*
33	Codex General Standard for Food Additives: Draft Additions to Table 1. Adopted with amendments	ALINORM 01/12, Appendix III*
34	Code of Practice for Source Directed Measures to Reduce Contamination of Foods with Chemicals. Adopted with amendments	ALINORM 01/12A, Appendix XIII*
35	Guidelines for the Use of Nutrition Claims: Table of Conditions for Nutrient Contents (Part B)	ALINORM 01/26, Appendix II*
<p>B. Volume 1B : Codex Standards for General Requirements (Food Hygiene)</p> <p>http://www.codexalimentarius.net/STANDARD/volume1b/vol1b_E.htm</p>		
Sl. No.	Title	Standard number
1	Code of Hygienic Practice for Aseptically Processed and Packaged Low-acid Foods	CAC/RCP 040-1993
2	Principles and Guidelines for the Conduct of Microbiological Risk Assessment	CAC/GL 030-1999
3	Guidelines Procedures for the Visual Inspection of Lots of Canned Foods for Unacceptable Defects	CAC/GL 017-1993

Sl. No.	Title	Standard number
4	Principles for the Establishment and Application of Microbiological Criteria for Foods	CAC/GL 021-1997
5	Recommended International Code of Practice of General Principles of Food Hygiene	CAC/RCP 001-1969
6	Code of Hygienic Practice for Refrigerated Packaged Foods with Extended Shelf- Life	CAC/RCP 046-1999
7	Code of Hygienic Practice for the Transport of Food in Bulk and Semi-Packed Food Adopted with amendments	ALINORM 01/13, Appendix III*
<p>C. VOLUME 2A : Pesticides Residues in Food - Maximum Residue Limits</p> <p>http://www.codexalimentarius.net/STANDARD/volume2a/vol2a_E.htm</p>		
Sl. No.	Title	Standard number
1	Recommended Methods of Sampling for the Determination of Pesticide Residues for Compliance with MRLs	CAC/GL 033-1999
2	Classification of Foods and Animal Feeds	XOT06-1989
3	Guidelines on Good Laboratory Practice in Pesticides Residue Analysis	XOT08-1993
4	Recommended Methods of Analysis for Pesticide Residues	XOT09-1995

D. VOLUME 2B : Pesticides Residues in Food – Maximum Residue Limits

http://www.codexalimentarius.net/STANDARD/volume2b/vol2b_E.htm

Sl. No.	Title	Standard number
1	List of Codex Extraneous Maximum Residue Limits in Food	EMRL(1)-1997
2	List of Codex Maximum Residue Limits for Pesticides Residues in Food	MRL(1)-1999
3	Maximum Residue Limits and Revised Maximum Residue Limits for Pesticides. Adopted except EMRL for DDT	ALINORM 01/24A, Appendix II*
4	Maximum Residue Limits and Revised Maximum Residue Limits for Pesticides	ALINORM 01/24, Appendix II*
5	Maximum Residue Limits and Revised Maximum Residue Limits for Pesticides. Except for Ethephon	ALINORM 01/24A, Appendix III*
6	Maximum Residue Limits and Revised Maximum Residue Limits for Pesticides	ALINORM 01/24, Appendix III*

(1) EMRLs and MRLs are adopted by the Codex Alimentarius Commission as Codex Standards.

E. VOLUME 3 : Codex Standards for Veterinary Drugs Residues in Food

http://www.codexalimentarius.net/STANDARD/volume3/vol3_E.htm

Sl. No.	Title	Standard number
1	Guidelines for the Establishment of a Regulatory Programme for Control of Veterinary Drug Residues in Foods	CAC/GL 016-1993

Sl. No.	Title	Standard number
2	Recommended International Code of Practice for Control of the Use of Veterinary Drugs	CAC/RCP 038-1993
3	Glossary of Terms and Definitions (Residues of Veterinary Drugs in Food)	XOT10-1993
4	List of Codex Maximum Residue Limits for Veterinary Drugs	MRL(1)-1999
5	Maximum Residue Limits and Revised Maximum Residue Limits for Veterinary Drugs	ALINORM 01/31, Appendix III*
6	Maximum Residue Limits for Veterinary Drugs	ALINORM 01/31, Appendix II*
(1) MRLs are adopted by the Codex Alimentarius Commission as Codex Standards.		
<p>F. Volume 4 : Codex Standards for Foods for Special Dietary Uses (Including Foods for Infants and Children)</p> <p>http://www.codexalimentarius.net/STANDARD/volume4/vol4_E.htm</p>		
Sl. No.	Title	Standard number
1	Guidelines on Formulated Supplementary Foods for Older Infants and Young Children	CAC/GL 008-1991
2	General Principles for the Addition of Essential Nutrients to Foods	CAC/GL 009-1987
3	Advisory Lists of Mineral Salts and Vitamin Compounds for Use in Foods for Infants and Children	CAC/GL 010-1979
4	Recommended International Code of Hygienic Practice for Foods for Infants and Children (including Microbiological Specifications and Methods for Microbiological Analysis)	CAC/RCP 021-1979

Sl. No.	Title	Standard number
5	Standard for Infant Formula	CODEX STAN 072-1981
6	Standard for Canned Baby Foods	CODEX STAN 073-1981
7	General Standard for the Labelling of and Claims for Prepackaged Foods for Special Dietary Uses	CODEX STAN 146-1985
8	Standard for Follow-Up Formula	CODEX STAN 156-1987
<p>G. Volume 11 : Codex Standards for Sugars, Cocoa Products and Chocolate and Miscellaneous</p> <p>http://www.codexalimentarius.net/STANDARD/volume11/vol11_E.htm</p>		
Sl. No.	Title	Standard number
1	Standard for Sugars	CODEX STAN 212-1999
2	Standard for Chocolate	CODEX STAN 087-1981
3	Revised Standard for Cocoa Butter Adopted with amendments (exception on level for lead)	ALINORM 01/14, Appendix II*
4	Revised Standard for Cocoa Powders (Cocoas) and Dry Mixtures of Cocoa and Sugars Adopted with amendments (exception on level for lead)	ALINORM 01/14, Appendix IV*
5	Revised Standard for Cocoa (Cacao) Mass (Cocoa/Chocolate Liquor) and Cocoa Cake Adopted with amendments (exception on level for lead)	ALINORM 01/14, Appendix III*

H. Volume 12 : Codex Standards for Milk and Milk Products

http://www.codexalimentarius.net/STANDARD/volume12/vol12_E.htm

Sl. No.	Title	Standard number
1	General Standard for the Use of Dairy Terms	CODEX STAN 206-1999
2	Milk Powders and Cream Powder	CODEX STAN 207-1999
3	Cheeses in Brine	CODEX STAN 208-1999
4	Butter	CODEX STAN A-1-1971, Rev.1-1999
5	Milkfat Products	CODEX STAN A-2-1973, Rev.1-1999
6	Evaporated Milks	CODEX STAN A-3-1971, Rev.1-1999
7	Sweetened Condensed Milks	CODEX STAN A-4-1971, Rev.1-1999
8	Cheese	CODEX STAN A-6-1978, Rev.1-1999
9	Whey Cheese	CODEX STAN A-7-1971, Rev.1-1999
10	Named Variety process(ed) Cheese and Spreadable Process(ed) Cheese	CODEX STAN A-8(a)-1978
11	Process(ed) Cheese and Spreadable Process(ed) Cheese	CODEX STAN A-8(b)-1978
12	Process(ed) Cheese Preparations	CODEX STAN A-8(c)-1978
13	Cream for Direct Consumption	CODEX STAN A-9-1976

Sl. No.	Title	Standard number
14	Yoghurt (Yogurt) and Sweetened Yoghurt (Sweetened Yogurt)	CODEX STAN A-11(a)-1975
15	Flavoured Yoghurt (Yogurt) and Products Heat-treated after Fermentation	CODEX STAN A-11(b)-1976
16	Whey Powders	CODEX STAN A-15-1995
17	Edible Casein Products	CODEX STAN A-18-1995
18	Cheddar	CODEX STAN C-1-1966
19	Danbo	CODEX STAN C-3-1966
20	Edam	CODEX STAN C-4-1966
21	Gouda	CODEX STAN C-5-1966
22	Havarti	CODEX STAN C-6-1966
23	Samsøe	CODEX STAN C-7-1966
24	Emmentaler	CODEX STAN C-9-1967
25	Tilsiter	CODEX STAN C-11-1968
26	Saint-Paulin	CODEX STAN C-13-1968
27	Provolone	CODEX STAN C-15-1968
28	Cottage Cheese Including Creamed Cottage Cheese	CODEX STAN C-16-1968
29	Coulommiers	CODEX STAN C-18-1969
30	Cream Cheese (Rahmfrischkase)	CODEX STAN C-31-1973
31	Camembert	CODEX STAN C-33-1973

Sl. No.	Title	Standard number
32	Brie	CODEX STAN C-34-1973
33	Extra Hard Grating Cheese	CODEX STAN C-35-1978
34	Codex of Hygienic Practice for Dried Milk	CAC/RCP 31-1983
35	Guidelines for the Preservation of Raw Milk by Use of the Lactoperoxidase System	CAC/GL 13-1991
36	Maximum Level for Aflatoxin M ₁ in Milk	ALINORM 01/12A, Appendix X*
37	Maximum Levels for Lead. Adopted with amendments, ML for vegetable oils does not apply to cocoa butter	ALINORM 01/12, Appendix XI*
38	Group Standard for Unripened Cheese Including Fresh Cheese. Adopted with modification (Pimaricin Temporary Endorsed)	ALINORM 01/11, Appendix II*
39	Amendment to the Codex Group Standard for Cheeses in Brine (Sampling)	ALINORM 01/11, Appendix V*
40	Amendment to the Codex General Standard for Cheese (Description)	ALINORM 01/11, Appendix IV*
41	Revised Standard for Edible Casein Products (exception on level for lead)	ALINORM 01/11, Appendix III*
<p>I. VOLUME 13 : Codex Standards for Methods of Analysis and Sampling</p> <p>http://www.codexalimentarius.net/STANDARD/volume13/vol13_E.htm</p>		
Sl. No.	Title	Standard number
1	Sampling Plans for Prepackaged Foods (AQL 6.5)	XOT 13-1969

Sl. No.	Title	Standard number
2	Guidelines for the Assessment of the Competence of Testing Laboratories Involved in the Import and Export Control of Food	CAC/GL 027-1997
3	Food Control Laboratory Management: Recommendations	CAC/GL 028-1997
4	List of Codex General Methods	XOT 15-1997
5	Methods of Analysis and Sampling: by alphabetical order of Provisions	XOT 17-1999
6	Methods of Analysis and Sampling: by alphabetical order of Commodity Categories and Names	XOT 16-1999
7	General Codex Methods for Contaminants	ALINORM 01/23,Appendix IV Part III*
* Adopted in the 24 th session of the CAC; not yet available on the internet address given for the volume.		
** Adopted in the 23 rd session of the CAC; not yet available on the internet address given for the volume.		



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