

A black silhouette of a person in profile, holding a bow and arrow, is positioned behind a solid red horizontal band. The person's right arm is raised, holding the bow, and their left arm is extended forward, holding the arrow. The red band is a thick, solid horizontal strip that spans the width of the page.

Page 209-220
Food safety

A decorative pattern of white hexagons is located in the bottom left corner of the page. The hexagons are arranged in a grid-like pattern, with some hexagons missing, creating a honeycomb-like structure. The background of the page is white, and the hexagons are a light gray color.

The collection of reference standards
- 2008 -



Chapter III-3: Food safety

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**NEW**

Contaminants in food

The general food law:

Regulation (EC) 178/2002 is "The General Food Law (GFL)" within EU and is laying out the general principles and requirements of the food law and European Food Safety Authority.

Council regulation (EEC) N)315/93 of 8.Feb 2003 is laying down the Community procedures for contaminants in food. This regulation does not apply where more specific Community rules exists, such as for pesticides, veterinary drug residues etc.

Food contaminants is defined as any substance not intentionally added to food which is present in food as a result of production, manufacture, processing preparation treatment, packing, packaging, transport or holding of such food as a result of environmental contamination

Examples of contaminants regulated or to be regulated under 315/93:

- Mycotoxins: e.g. Aflatoxins, ochratoxin A, patulin, fusarium-toxins, ergot alkaloids
- Inherent plant toxins: Pyrrolizidine alkaloids, hydrocyanic acid, solanine etc.
- Processing/industrial contaminants: 3-MCPD (3-Monochloropropanediol), inorganic tin, PAHs, acrylamide, furan, ethylcarbamate
- Other environmental contaminants: Dioxins, dioxin and nondioxin-like PCBs, PAHs, BFRs, PFOS, tributyltin, iodine
- Heavy metals: Lead, cadmium, mercury, arsenic, methylmercury
- Nitrates

Naturals toxins

Mycotoxins

Mycotoxins are toxins formed by microorganisms present in food, and should be avoided. Laws in Europa, USA and other regions of the world have strict regulations on the accepted mycotoxin content.

For dioxins and aflatoxin M1 the approach to establish the decision limit can made according to Commission Decision 657/2002/EC. See also http://ec.europa.eu/comm/food/food/chemicalsafety/contaminants/report-sampling_analysis_2004en.pdf

The following EU recommendations, regulations and decisions apply:

Recommendation 2003/598/EC: **Patulin** in apple juice etc.

Recommendation 2006/583/EC: Prevention and reduction of **Fusarium toxins**

Regulation (EC) 1881/2006: **Fusarium toxins in maize.**

Decision 657/2002/EC. For dioxins and **aflatoxin M1** the approach to reporting of analytical results establishing the decision limit can made according to Commission Decision 657/2002/EC. See also http://ec.europa.eu/comm/food/food/chemicalsafety/contaminants/report-sampling_analysis_2004en.pdf

For individual and mixtures of mycotoxins: See the Compounds section, page 420.



Ergot alkaloids

Available ergot alkaloids:

3917.32-100-ME	Ergocornine	[564-36-3]	MW 561.7	100µg/mL in methanol
3765.32-100-ME	Ergocryptine	[511-09-1]	MW 575.7	100µg/mL in methanol

Please inquire for others

Toxic pyrrolizidine alkaloids

See the Compounds section, page 421.

Please inquire if you do not find what you look for. New compounds are under preparation.

Solanine

3865.45-2MG	Solanine, 95%,	[20562-02-1]	MW 868.1	2 mg neat
3866.27-10MG	Solanidine, 98%	[80-78-4]	MW 397.6	10 mg neat

Algae/shellfish toxins

Please see the Compounds section for available algae toxins, page 423.

Other toxic natural food ingredients

Coumarin

Coumarin is a natural compound with a pleasant vanilla-like sweet odour and is found in a wide variety of plants and plant tissues such as green tea and Chinese cinnamon. In living plants coumarin is mostly present as glycoside, but the coumarin is liberated by enzymes. Use of coumarin in a pure form is forbidden due to its toxicity (European Community Directive 88/388/ECC). In Chinese cinnamon, coumarin occur together with cinnamaldehyde and benzaldehyde, while in Ceylon cinnamon coumarin is replaced by eugenol.

3867.9-K-ME	Coumarin (1,2-Benzopyrone)	[91-64-5]	MW 146.15	1000µg/mL in methanol
3868.9-K-ME	Coumarin-d4 (IS)	[185056-83-1]	MW 150.17	1000µg/mL in methanol
3869.9-1ML	Cinnamaldehyde	[14371-10-9]	MW 132.16	1mL neat
3870.7-1ML	Benzaldehyde	[100-52-7]	MW 106.12	1mL neat
3871.10-1ML	Eugenol	[97-53-0]	MW 106.12	1mL neat
3872.5-KIT	Coumarin kit, one of each, 5x1mL coumarin-d4			



Toxic compounds formed by food processing

3-monochloropropandiol (3-MCPD) and chloroesters

Chloropropandiols are formed during food processing. "Bound" 3-chloropropandiol (lipid chloro esters) is found in different foods.

3873.3-K-ME	3-Chloro-1,2-propandiol	[96-24-2]	MW 110.54	1000µg/mL in methanol
3874.3-K-ME	3-Chloro-1,2-propane-d5-diol	[342611-01-2]		1000µg/mL in methanol

Esters: Please request

Acrylamide

3875.3-1G	Acrylamide	[79-06-1]		1g
3876.3-100-ME	Acrylamide-d5	[108152-65-4]		100µg/mL in methanol

Furan

<http://www.cfsan.fda.gov/~dms/furandat.html>.

Furan can be formed from carbohydrates, amino acids and ascorbic acid during food processing. The major precursor is reported to be ascorbic acid under thermal conditions (Maerck et al. *J. Agric. Food Chem.* 2006, 54, 2786-2793).

3877.4-1G	Furan	[110-00-9]		1g
3878.4-100-ME	Furan-d4	[6142-90-1]		100µg/mL in methanol

Stigmastadienes

Stigmastadienes are formed by the processing of olive and other vegetable oils.

See below for stigmastadiene standards

PAHs in animal and vegetable fats and oils

See ISO method 15753: 2006, page 30.

S-4469-100-T	15 Selected PAHs in toluene
S-4469-200-5AN	15 Selected PAHs in acetonitrile

Food packaging contaminants

Recycled fibres

It has been shown that recycled fibres may contain considerable amounts of diisopropylphthalene, diisobutylphthalate and benzophenone.

2,3,5-Trimethylnaphthalene is applied as internal standard:

2102.16-10MG	DiBP (Diisobutyl phthalate)	[84-69-5]
1126.16-K-IO	DIPN (Diisopropylphthalene)	[24157-81-1]
2748.13-1ML	Benzophenone	[119-61-9]
0706.13-500-IO	2,3,5-Trimethylnaphthalene	[2245-38-7]



Plasticizers, phthalates and adipates

There are EU-regulations on the content of plasticizers in food as a result of food packaging. Despite of these regulations, high concentrations (with a mean over 200 ppm) of plasticizers have been found in the gaskets of lids of food-jars.

	ESBO (epoxidized soybeen oil, please inquire)	
1225.12-10MG	DEPH (diethyl phthtate)	[84-66-2]
3049.28-10MG	DIDP (diisodecyl phthalate)	[26761-40-0]
1229.26-10MG	DINP (diisononyl phthalate)	[28553-12-0]
1224.24-10MG	DEHA (diethylhexyl phthalate)	[117-81-7]

For details on phthalates and adipates, see the Compounds section, pages 381-382.

2-Ethylhexanoic acid from jar lids

2-Ethylhexanoic acid (EHA) is widely used in the technical sector as an intermediate for production of paint additives, thickening agent for fuels, stabilizers for silicones etc.

2-Ethylhexanoic acid, defined as an hazardous substance, have been found in baby food and fruit juices filled in glass bottles with twist-off lids.

3879.8-K-ME	2-Ethylhexanoic acid	[149-57-5]	MW 144.22	1000µg/mL in methanol
3880.8-K-ME	2-Ethylhexanoic acid-d15	[352431-38-1]	MW 159.30	1000µg/mL in methanol

Semicarbazide (SEM)

Semicarbazide is a metabolite of nitrofurazone (agricultural drug forbidden in Europe) and formed from thermal breakdown of azodicarbonamide. The analysis is performed by transformation to 2-nitrobenzaldehyde.

3881.7-1G	2-Nitrobenzaldehyde	[552-89-6]	MW 151.12	1g
3882.1-100MG	Semicarbazide, 98%	[57-56-7]	MW 75.07	100mg
3883.2-100MG	Azodicarbonamide	[123-77-3]	MW 116.03	100mg
3884.6-100MG	Nitrofurazone (5-Nitro-2-furfurylidene semicarbazone)	[59-87-0]	MW 198.14	100mg

Ethyl carbamate

The World Health Organisation (WHO) has officially labelled ethyl carbamate, a compound produced during yeast fermentation, as a Group 2A carcinogen, ranking it alongside other substances likely to cause cancer in humans.

3885.3-100mg	Ethyl carbamate	[51-79-6]	MW 89.09	100mg
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ITX - Isopropylthioxanthone

Italian authorities have detected baby milk cartons containing the chemical Isopropylthioxanthone (ITX). ITX is used in printing inks on milk and fruit juice cartons.

ITX is a mixture of two isomers to which the US EPA has given a high hazard ranking for environmental effects. The 2-isomer is the dominant ingredient. The European Food Safety Authority (EFSA) has recently undertaken a risk assessment on ITX: http://www.efsa.eu.int/science/afc/afc_opinions/1256_en.html

2722.16-K-IO	2-Isopropylthioxanthone (99+%)	[5495-84-1], 1000µg/mL in isoctane
2722.16-10MG	10mg neat	



2726.16-K-IO 4-Isopropylthioxanthone (99+%) [83846-86-0], 1000µg/mL in isooctane
2726.16-10MG 10mg neat

Internal standard

2732.16-100-IO 1,3,4-d₃-2-Isopropylthioxanthone (98+%), 100 µg/mL, 1.1 mL in isooctane
2732.16-10MG 10mg neat

Veterinary drug residues

Stilbenes - DES

Antithyroid agents – thiouracil

Steroids – boldenone, testosterone etc.

Resorcinic acid lactones – zearalenol etc.

Cortico-steroids – dexamethazone, prednisolone etc.

Beta-antagonists – clenbutenol

Please inquire.

Environmental contaminants

POPs

Dioxins, page 358.

PFOS, PFAs, pages 363-365.

PCBs, pages 354-356.

Pesticides, pages 367-372.

See the Environmental section, page 109 and onward, and the Compounds section, page 223 and onward.

Regulation (EC) 333/2007 of 28 March 2007 is applicable to sampling and methods of analysis of metals, 3-MCPD and PAH, and replaces former Commission Directives (2001/22/EC, 2004/16/EC and 2005/10/EC).

For dioxins and aflatoxin M1 the approach to establish the decision limit can be made according to Commission Decision 657/2002/EC. See also http://ec.europa.eu/comm/food/food/chemicalsafety/contaminants/report-sampling_analysis_2004en.pdf



Food additives

Aroma chemicals, taste and odors (aroma)

Off-flavour compounds

3886.8-100-ME	Skatole	[83-34-1]	131.18	Faecal-like
3887.11-100-ME	2-Methylisoborneol	[2371-42-8]	168.28	Earthy, muddy
3888.12-100-ME	(+/-)-Geosmin	[16423-19-1]	182.31	Earthy
3889.7-100-ME	2,4,6-Trichloroanisole	[87-40-1]	211.48	Mouldy-like
3890.4-100-ME	Methional	[3268-49-3]	104.17	Sunlight flavour in milk
	6-trans-Nonenal			Been-like flavour in milk powder
	cis-1,5-Octadien-3-one	[65767-22-8]		Metallic flavour in milk fat
	Octa-3,5-dien-2-one			Hay-like in deap frozen peas
3891.15-100-ME	Nootkatone	[4674-50-4]	218.34	Grapefruit note in orange juice
3892.10-100-ME	Carvone	[99-49-0]	150.22	Terpene note in orange juice
3893.5-100-ME	3-Methyl-2-buten-1-thiol	[5287-45-6]	102.19	Sunlight flavour in beer

Thiazoles

3894.5-100-ME	2-Acetylthiazole	[24295-03-2]	217.18	Cereal, popcorn
3895.5-100-ME	2-Acetyl-2-thiazoline	[29926-41-8]	129.18	Popcorn
3896.7-100-ME	Benzothiazole	[95-16-9]	135.18	Quinoline, rubber
3897.7-100-ME	2-Isobutylthiazole	[18640-24-9]	141.23	Green, tomato, wine

Pyrazines

3770.9-K-IO	2-sec-Butyl-3-methoxypyrazine	24168-70-5	1000µg/mL	isooctane	Earthy
3771.6-K-IO	2,3-Dimethylpyrazine	5910-89-4	1000µg/mL	isooctane	Green, nutty, coffee
3772.6-K-IO	2,5-Dimethylpyrazine	123-32-0	1000µg/mL	isooctane	Chocolate, roasted, earthy
3773.6-K-IO	2,6-Dimethylpyrazine	108-50-9	1000µg/mL	isooctane	Chocolate, roasted nuts, fried potato
3774.8-K-IO	2-Ethyl-3,5-dimethylpyrazine	13925-07-0	1000µg/mL	isooctane	Earthy, roasted, nutty
3775.8-K-IO	2-Ethyl-3,6-dimethylpyrazine	13360-65-1	1000µg/mL	isooctane	Earthy, roasted
3776.7-K-IO	2-Ethyl-3-methoxypyrazine	25680-58-4	1000µg/mL	isooctane	Roasted nuts
3777.7-K-IO	2-Ethyl-3-methylpyrazine	15707-23-0	1000µg/mL	isooctane	Potato, roasted, cereal
Please inquire	2-Ethyl-5-methylpyrazine	13360-64-0	Please inquire		Nutty, roasted
3779.6-K-IO	2-Ethylpyrazine	13925-00-3	1000µg/mL	isooctane	Musty, nutty
3780.9-K-IO	2-Isobutyl-3-methoxypyrazine	24683-00-9	1000µg/mL	isooctane	Hot paprika
3781.9-K-IO	2-Isobutyl-3-methylpyrazine	13925-06-9	1000µg/mL	isooctane	
3782.8-K-IO	2-Methoxy-3-isopropylpyrazine	25773-40-4	1000µg/mL	isooctane	Earthy, pepper, vegetable
3783.6-K-IO	2-Methoxy-3-methylpyrazine	2847-30-5	1000µg/mL	isooctane	Roasted nuts
3784.5-K-IO	2-Methoxypyrazine	3149-28-8	1000µg/mL	isooctane	Nutty, Sweet
3785.5-K-IO	2-Methylpyrazine	109-08-0	1000µg/mL	isooctane	Green, musty, potato
3787.7-K-IO	2,3,5-Trimethylpyrazine	14667-55-1	1000µg/mL	isooctane	Earthy, nutty, roasted
3786.8-K-IO	2,3,5,6-Tetramethylpyrazine	1124-11-4	1000µg/mL	isooctane	Musty, roasted



Phenols

1358.7-1G	p-Cresol	[106-44-5]	1g	Smoky: Coffee, roasted peanuts
1411.8-1G	4-Ethylphenol	[123-07-9]	1g	Woody: Milk, tomatoes, coffee
2372.7-K-IO	Guaiacol	[90-05-1]	1000µg/mL in iso-octane	Smoky: Coffee, milk, meat
3898.8-K-MX	4-Vinylphenol	[2628-17-3]		Harch, smoky: Beer and milk
3899.8-K-IO	2-Methoxy-4-vinylphenol	[7786-61-0]	1000µg/mL in iso-octane	Clove-like: Coffee, beer, apple
3900.8-1ML	Eugenol	[97-52-7]	1mL	Spicy: Tomato paste, brandy
2370.8-K-IO	Vanillin	[121-33-5]	1000µg/mL in iso-octane	Vanilla: Vanilla, rum, coffee

Terpenes

Myrcene	Carveol	Camphor
trans-Ocimene	α-Terpineol	Fenchone
cis-Ocimene	Perilla alcohol	trans-α-Farnesene
Linalool	Menthene	cis-α-Farnesene
Geraniol	Pulegone	β-Farnesene
Nerol	Carvone	Farnesol
Neroloxide	1,3-p-Menthadien-7-al	all-trans-α Sinesal
Citronellol	1,8-Cineole	trans,trans,cis-α-Sinesal
Rose oxide	1,4-Cineole	β-Bisabolene
Hotrienol	Sabiene	(-)-Zingiberene
Limonene	Thujone	(-)-Sesquiphellandrene
α-Terpinene	(+)-cis-Sabiene hydrate	Humulene
α-Phellandrene	(+)-trans-Sabiene hydrate	β-Cadinene
β-Phellandrene	α-Pinene	Valencene
γ-Terpinene	β-Pinene	(+)-Nootkatoone
Menthol	Camphene	β-Selinene
Pulegol	Δ ³ -Carene	β-Caryophyllene

Please inquire

Food colours

Carotenoids

The following carotenoids are produced commercially as food additives (J. Paust in *Carotenoids* Vol.2, Eds Britton, Liaaen-Jensen and Pfander, Birkhäuser, 1996):

2641.40-10MG	β,β-Carotene	[7235-40-7]	E 160a	Margarine, juice, health food
3901.40-5MG	Canthaxanthin	[514-78-3]	E 161g	Poultry, egg yolk and broiler skin
3902.,40-5MG	Astaxanthin	[472-61-7]		Aquaculture, salmon and trout
	Ethyl 8'-apo-β-caroten-8'-oate			Poultry, egg yolk and broiler skin
3903.30-5MG	8'-Apo-β-caroten-8'-al	[1107-26-2]	E 160e	Cheese, dressings
	Citranaxanthin	[3664-90-8]		Poultry, egg yolk pigmentation



Natural carotenoids used or found in food

3925.40-5MG	Lycopene	[502-65-8]		E 160d	Mayonnaines, ketchup, sauces, tomatoes
8102.40-1MG	Capxanthin	[465-42-9]			Pepper, Paprica
3927.21-5MG	Lutein	[127-40-2]			Alfalfa
3654.8-1MG	Zeaxanthin	[144-68-3]			Maize
3904.25-5MG	Bixin	[6983-79-5]		E 160b	Used in fats and mayonnaise, safran

Chlorophylls

3928.55-1G	Chlorophyll	[1406-65-1]	Green	E 140	Edible oils
	Chlorophyllin	[11006-34-1]	Green	E 141	Confectionary, candy, jellies
3593.55-1MG	Chlorophyll a	[479-61-8]			
3594.55-1MG	Chlorophyll b	[519-62-0]			

Other common food colours

3905.16-1G	Tartrazine	[1934-21-0]	Lemon yellow	E 102	Puddings, ice creams etc
3906.17-1G	Riboflavin	[83-88-5]	Yellow	E 101	Mayonnaise, soups, dessert
3907.21-1G	Curcumin	[458-37-7]	Yellow-red	E 100	Mustard
3908.16-1G	Sunset Yellow	[2783-94-0]	Orange	E 110	Beverages, honey like products
3909.20-1G	Amaranth, Red No 2	[915-67-3]	Red, Bluish	E 123	Beverages, candy
	Ponceau 4R	[2611-82-7]	Scarlet-red	E 124	Beverages, candy, salmon, cheese
3910.22-1G	Carmine	[1390-65-4]	Bright red	E 120	Alcoholic beverages
	Anthocyanidin		Red-violet	E 163 a-f	Jams, pop drinks
	Erythrosine, Red No 3	[16423-68-0]	Cherry-red	E 127	Fruits, jams, candy products
3911-1G	Red 2G	[3734-67-6]	Red, Bluish	E 128	Confectionary
	Indigo Carmine, Blue No 2	[860-22-0]	Purple blue	E 132	Confectionary, candy
3912.27-1G	Patent blue V	[3536-49-0]	Blue, greenish	E 131	Confectionary, candy
	Brilliant Blue, Blue No 1	[3844-45-9]	Blue, greenish	E 133	Confectionary, candy
	Green S, Brilliant Green BS	[633-03-4]	Green	E 142	
	Black BN		Violet, bluish	E 151	Fish roe colouring, confectionary

Please inquire

Preservatives, antioxidants, sweeteners

Please inquire.



Other natural products in food

Carotenoids See Food colours above

Lipids and fatty acids See the Compounds section, pages 425-427.

Steroids, sterols See the Compounds section, pages 412-415, and below.

Sterols in animal fats, milk fat and vegetable oils **NEW**

Animal fats are rich in cholesterol (C27) while plant materials are rich in C29-Sterols like sitosterol and stigmasterol.

New ISO methods for the analysis of sterols in anhydrous milk fat (ISO 18078/ISO 18252) and animal and vegetable oils (ISO 12228) has recently been introduced:

Available products

1583.30-600-DI	Betulin, Internal Standard Solution, ISO 18078	1x1mL, 1x10mL, 5x10mL
1583.30-600-10DI	600µg/mL in di-isopropyl ether	
1583.30-K-AC	Betulin, Internal standard solution, ISO 12228	1x1mL, 1x10mL
1583.30-K-10AC	1.0 mg/mL in acetone	
0622.27-600-HX	5α-Cholestane (99+%), Internal standard solution, ISO 18252	1x1mL, 1x10mL
0622.27-600-10HX	600µg/mL in n-hexane/ethanol (1:10) or n-hexane	
2900.27-600-HX	Cholesterol standard solution	1x1mL, 1x10mL
2900.27-600-10HX	600µg/mL in n-hexane	
2795.27-K-AC	5α-Cholestan-3-ol (Cholestanol), Alternative internal standard	1x1mL, 1x10mL
2795.27-K-10AC	1.0mg/mL in acetone	
3913.28-100-HX	Campesterol standard solution	1x1mL, 5x1mL
	100µg/mL in n-hexane	
3767.29-100-HX	Stigmasterol standard solution	1x1mL, 5x1mL
	100µg/mL in n-hexane	
2732.29-100-HX	β-Sitosterol standard solution	1x1mL, 5x1mL
	100µg/mL in n-hexane	



S-4487 Sterol standard mixture for ISO 12078, neat mixture in 1mL sealed ampoule
(Ref 9.1.2 in the standard) For Qualitative analysis after silylation

2900.27	Cholesterol	600µg
3913.28	Campesterol	100µg
3707.29	Stigmasterol	100µg
2732.29	Sitosterol	100µg
1583.30	Betulin (IS)	600µg

S-4494 Sterol standard mixture for ISO 18252
For Qualitative analysis, neat in 1 mL sealed ampoule

2900.27	Cholesterol	600µg
3913.28	Campesterol	100µg
3767.29	Stigmasterol	100µg
2732.29	Sitosterol	100µg
1583.30	5a-Cholestane (IS)	600µg

Dissolve in 0.25 mL n-hexane for split injector or 3 mL for on-column injector

S-4498 Standard solution for TLC, ISO 12228

2900.27	Cholesterol	1mg/mL in acetone
1583.30	Betulin	5mg/mL in acetone

S-4499 Identification mixture for sterols, ISO 12228

50 µg/mL each in isooctane

2900.27	Cholesterol
2795.27	Cholestanol
2734.28	Brassicasterol
3913.28	Campesterol
3767.29	Stigmasterol
2732.29	Sitosterol
2717.29	Sitostanol
3915.30	Erythrodiol
1681.30	Uvaol
1583.30	Betulin

Silylating agents

1940.3-5ML	Trimethylchlorosilane, TMCS
1943.6-10ML	Hexamethyldisilazane, HMDS
1941.6-1ML	N-Methyl-N(trimethylsilyl)-trifluoroacetamide, MSTFA
1941.6-5G	N-Methyl-N(trimethylsilyl)-trifluoroacetamide, MSTFA
3916.8-1ML	N-Methyl-N-(trimethylsilyl)-heptafluorobutyramide, MSHFBA



Stigmastadiene in vegetable oils/olive oils

NEW

ISO method 15788

The steradienes content and especially the stigmastadiene content is determined in vegetable oils because steradienes are formed by dehydration of sterols during bleaching and also partially during steam washing and deodorization. The method is also suitable as a screening method to detect the presence of refined vegetable oils in virgin oils such as olive oil.

0678.27-K-BM	Cholesta-3,5-diene stock solution 1mg/mL in tert-butyl methyl ether, 1mL
0678.27-10-MX	Cholesta-3,5-diene External standard solution 10µg/mL (0.01µg/µL) in acetonitrile/ tert-butyl methyl ether 1:1, 1mL
0678.27-2-PT	Cholesta-3,5-diene Internal standard solution 2µg/mL in petroleum ether, 1mL
0622.27-K-IO	5α-Cholestane standard solution for GC 1mg/mL in isooctane, 1 mL

Reference standards

0678.27-100-IO	Cholesta-3,5-diene
0686.29-100-IO	Stigmastatriene, (24R)-24-Ethylcholesta-3,5,22-triene
0682.28-200-IO	Campestadiene, (24R)-24-Methylcholesta-3,5-diene, mix with 24-Ethyl
0682.29-100-IO	Stigmastadiene, (24R)-24-Ethylcholesta-3,5-diene

ISO methods

For details, see the Methods section, page 13 and onward.

- ISO 12078, IDF 159:2006	Sterols in milk fat
- ISO 18252, IDF 200:2006	Sterols in milk fat
- ISO 12228:1999	Sterols in animal and vegetable fats and oil
- ISO 15788-2:2006	Stigmastadienes in vegetable oils