

1 Scope and field of application

This standard bans or restricts the use of chemical substances in Danfoss' products and production processes and by Danfoss' suppliers, contractors and tenants.

The chemical substances embraced by this Corporate Standard are listed in two lists; the black list (banned substances), and the grey list (restricted substances).

This standard shall be complied with throughout the entire Danfoss Group.

2 Responsibilities

The top management of each organisational unit (business, sales or service) shall ensure compliance with all requirements in this Corporate Standard.

The management of all tenants and suppliers/contractors working at Danfoss owned premises has the responsibility for ensuring compliance with this standard.

3 Requirements within the Danfoss organisation

This Corporate Standard shall be complied with in all activities involving chemical substances (i.e. design of products or production equipment, planning, supplier handling, maintenance and construction activities).

This Corporate Standard does not supersede any national environmental regulation that is more restrictive than the requirements in this standard.

The bans and restrictions on use of chemical substances are all-embracing and cover substances used for Danfoss products and items for maintenance, repair and operation (e.g. tools, furniture and lubricants) as well as all production processes used during manufacturing of the products.

New members of the Danfoss Group shall immediately comply with this Corporate Standard. If immediate compliance is not possible for technical reasons, action plans for compliance approved by the general manager must be implemented within a limited time period but not exceeding one year.

4 Requirements for suppliers and subcontractors

Suppliers and subcontractors to Danfoss are required to comply with the Black and Grey Lists and shall on request document the type and amount of hazardous substances present in materials, subassemblies or components and used in processes.

Suppliers must not supply products, components or materials containing substances on the Black List nor use these substances in processes manufacturing parts for Danfoss.

Suppliers shall respect the Danfoss Code of Conduct for Suppliers. If the supplier is not complying with this code an action plan must be drawn up.

5 Requirements for contractors, tenants and their suppliers

Subcontractors, tenants or their suppliers working on Danfoss' owned property must not bring substances on the Black List onto Danfoss premises nor use these substances in processes manufacturing parts for Danfoss.

Substances on the Grey List shall be avoided where possible, or minimized if they cannot be avoided for technical or reliability reasons.

6 The Black List (banned substances)

Banned substances shall under no circumstances be present in products supplied to the market, nor in products purchased from our suppliers. When testing the product for substances, the concentrations listed in Annex A must not be exceeded.

Banned substances shall not be used in production or maintenance processes at Danfoss factories neither in pure form nor in mixtures with other substances.

7 The Grey List (restricted substances)

The use of restricted substances shall be avoided wherever possible, or minimized if they cannot be avoided for technical or reliability reasons.

Substances on the Grey List shall as a general rule not be introduced when developing new products or processes.

Some restricted substances are allowed for use under specific circumstances described in Annex B, but should be phased out, if possible, and replaced with technically and economically acceptable alternatives. The alternative must be environmentally friendlier than the substituted substance.

8 Evaluation of substances

In revising existing products and production processes the environmental evaluation of every potential hazardous substance and/or material against the criteria in this Corporate Standard is required.

For new substances and materials not mentioned in this standard an environmental evaluation is mandatory before use.

The use of substances and materials must as a minimum comply with relevant national and international legislation including European Union directives and regulations.

9 References

Danfoss documents:

(If no date is given, the latest issue applies)

[500B0574](#), Corporate Standard

Environmental Policy

[Danfoss Supplier Code of Conduct](#)

Changes in relation to previous issue:

Changes to the text.

A new paragraph regarding responsibility has been added

The Negative list is updated according to changes in the relevant national or international legislation and new knowledge of toxicological and environmental properties of chemical substances.

Annex A – Banned substance is now called “The Black list” and Annex B – Restricted substance is now called “The Grey list”.

On the Black list 3 new groups “Annex XIV substances, carcinogenic man-made mineral fibres and formaldehyde” have been added.

On the Grey list two new groups “Perfumes”, “Rubber chemicals” and “SVCHsubstances” have been added.

Annex A – The Black List (Banned Substances)

Substance/preparations	Substances 1)	CAS no. 2)	Restricted process or product content and related regulations 3)	Concentration limit	Risk 4)
Azo dyes	Products that release carcinogenic substances and specific amines	Several	According to 2002/61/EC	0,1 %	C E
Benzene	Benzene	71-43-2	All. Except in gasoline	0,1 %	C E
Bromochlorodifluoromethane Bromotrifluoromethane 1,2-dibromotetrafluoroethane	R-1211 R-1301 R-2402	353-59-3 75-63-8 124-73-2	All. Exemptions according to 7)	0,1 %	OE
CFC (Chlorofluorocarbon)	R-11 R-12 R-113 R-114 R-115	75-69-4 75-71-8 76-13-3 76-14-2 76-15-3	All. Exemptions according to 7)	0,1 %	OE
HCFC (Hydrochlorofluorocarbon)	R-22 R-142b	75-45-6 75-68-3	All. Exemptions according to 7)	0,1 %	OE
HFC (Hydrofluorocarbon)	R-134a R-152a R-227	811-97-2 75-37-6 431-89-0	DK: All except the following with fillings between 0,15 and 10kg: - Refrigeration plants - Heat pumps - Airconditioning plants In cooling systems for heat systems recovery with fillings under 50 kg EU: Decision No. 280/2004/EC Others according to 8)		E
PFC	Perfluorocarbons	Several	EU: Decision No. 280/2004/EC Others according to 8)	0,1 %	E
SF6	Sulfurhexafluoride	2551-62-4	All	0,1%	E
Chlorinated solvents	Trichloroethylene	79-01-6	Exemption: In thermo bulbs for fire-extinguishing equipment	0,1 %	C E
	Tetrachloroethylene	127-18-4			C E
	Trichloroethane (1, 1, 1-)	25323-89-1	All		C E
	Chlorobenzene	108-90-7			C E
	Methylene chloride	75-09-2			C E
Carbon tetrachloride	56-23-5	O C E			
Trichlorobenzene	12002-48-1	C E			
Lubricants	Chlorinated paraffin C10-C13.	Several	According to REACH regulation 1907/2006/EC, 10)	0,1 %	C
	Mineral oil w/PAH (Polycyclic Aromatic Hydrocarbons) as:	Several			
	Benzo(a)pyréne C20H12	50-32-8	All. EU: Decision No. 2003/11/EC	0,1 %	C
	Benzo(b)fluoranthéne C22H12	205-99-2			
	Benzo(ghi)péryléne C20H12	191-24-2			
	Benzo(k)fluoranthéne C20H12	207-08-9			
Indéno(1,2,3-cd)pyréne C22H12	193-39-5	10 ppm	C		
Nitrites					
Plasticisers	DEHP (di-2-ethylhexyl phthalate) DBP (dibutyl phthalate) BBP (butylbenzyl phthalate)	117-81-7 84-74-2 85-68-7	According to REACH regulation 1907/2006/EC, 10)	0,1 %	R
Flame retardants with proven negative health effects	Pentabromodiphenylethers Octabromodiphenylethers	32534-81-9 32536-52-0	All. EU: Decision No. 2003/11/EC	0,1 %	E R
Flame retardants: PBB and PBDE	Polybrominated biphenyls and Polybrominated diphenylethers	Several	According to 5)	0,1 %	E R
Persistent Organic Pollutants (POP)	Dioxins	Several	All, according to Stockholm Convention 11)	0,1 %	C E
	Dibenzofuranes	Several			C E
	DDT	50-29-3			C E
	Pentachlorophenol	87-86-5			C E
	Dieldrin	60-57-1			C E
	Aldrin	309-00-2			C E
Endrin	72-20-8	E			

Substance/preparations	Substances 1)	CAS no. 2)	Restricted process or product content and related regulations 3)	Concentration limit	Risk 4)
Persistent Organic Pollutants (POP)	Toxaphene	8001-35-2	All, according to Stockholm Convention 11) EU: Decision No. 2006/122/EC		C E
	Hexachlorobenzene	118-74-1			C E
	PCB	1336-36-76-44-8			E
	Heptachlor	Several			
Nonylphenols	Nonylphenol (4-)	104-40-5	All	0,1 %	E R
	Nonylphenoethoxylate	Several			
Tar-like oil	Creosote	8001-58-9	All. E.g. wood in buildings, packaging materials and outdoor facilities. According to Directive 2001/90/EC	0,1 %	C E
Cresylphosphates	Tricresylphosphate	78-30-8		0,5 %	E
	Dicresylphosphates	Several			
Formaldehyde	Formaldehyde	50-00-0	In its own, in preparations or released from materials	0,15%	A C E
Monomers	Acrylonitrile	107-13-1	As monomer in ABS, SAN, PVC and other copolymers	2 ppm	C
	Vinylchloride	75-01-4			C E
	Butadiene (1,3 -)	106-99-0			C
Asbestos	Crocidolite	12001-28-4	All. E.g. insulating material in buildings, in products, gas-kets. Severe precautions should be taken in refurbishing asbestos containing buildings	0,1 %	C
	Amosite	12172-73-5			
	Anthophyllite	77536-67-5			
	Chrysotile	12001-29-5			
	Actinolite	77536-66-4			
Mineral wool fibres	Man made mineral fibres	Several	With proven carcinogenic effects	0,1 %	C
Arsenic	Arsenic	7440-38-2	According to REACH regulation 1907/2006/EC, 10)	0,1 %	E T
	Diarsenic pentaoxide	1303-28-2			
	Diarsenic trioxide	1327-53-3			
	Arsenic compounds	Several			
Cadmium	Cadmium	7440-43-9	For products According to 5) In packaging material sum of Lead, Mercury, Cadmium and Chromium +6 should not exceed 100 ppm 9)		C E
	Cadmium compounds	Several			
Hexavalent chromium - Chromium (6+) and compounds	CrO ₃ , Chromic acid, chromates	Several	For products According to 5) In packaging material sum of Lead, Mercury, Cadmium and Chromium +6 should not exceed 100 ppm 9)		C E
Mercury	Mercury	7439-97-6	For products According to 5) In packaging material sum of Lead, Mercury, Cadmium and Chromium +6 should not exceed 100 ppm 9)		N E
	Mercury compounds	Several			
Lead	Lead	7439-92-1	According to 6). In packaging material sum of Lead, Mercury, Cadmium and Chromium +6 should not exceed 100 ppm 9)		T N E
	Lead compounds	Several			
Thallium	Thallium	7440-28-0	All. E.g. Thallium sulfate in semiconductors, thermometers and optical instruments, and photoelectrical cells, thallium acetate in solutions and thallium chloride as a catalyst	0,1 %	T E
	Thallium containing compounds	Several			
Organotin compounds	Mono-, di-, and trialkyl and -aryl tin compounds	Several	All	0,1 %	E
Annex XIV substances	All substances listed	Several	According to REACH regulation 1907/2006/EC, 10)	0,1 %	E C T

Annex B – The Grey List (Restricted Substances)

Substance/preparations	Substances 1)	CAS no. 2)	Restricted process or product content and related regulations 3)	Concentration limit	Risk 4)
Carcinogenic, Reprotoxic, Allergenic, Neurotoxic substances (CRAN)	E.g. according to EC directive 2001/59/EC (Risk phrases: R39, R40, R42, R43, R45, R46, R48, R49, R60-R64, R68)	Several	All	0,1 %	C R A N
Organic solvents	Liquids at 25 °C, boiling point < 250 °C. (e.g. kerosene)	Several	All	0,1 %	C R A N
Flame retardants: PBB and PBDE	Polybrominated biphenyls and polybrominated diphenylethers	Several	All, except in electronics	0,1 %	R E
Hardeners	TGIC	2451-62-9	Powder paints	0,1 %	T
Epoxy and isocyanate resins (PUR)	Bisphenol A-diglycidyl ether	1675-54-3	Open spray applications based on these substances are in general banned in DK	0,1 %	A
	MDI (-diphenylmethane-4,4'-diisocyanate)	101-68-8			A
	MDI (-diphenylmethane-2,4'-diisocyanate)	5873-54-1			A
	MDI (-diphenylmethane-2,2'-diisocyanate)	-			A
	TDI (toluen-2,4-diisocyanate)	584-84-9			A C
TDI (toluen-2,6-diisocyanate)	91-08-7	A C			
Methacrylates and acrylates	Ethylacrylates, methylacrylates	Several	Used typically in glues and adhesives	0,1 %	A
Endocrine disruptors (EDC), Hormonally Active Agents (HAA)	Phthalates, parabenes,	Several	All	0,1 %	R
Rubber Chemicals	Aminobiphenyl (4-) + salts	92-67-1	Dye	0,1 %	C E
	Benzidine + salts	92-87-5	Dye		C E
	Thiocarbamide	62-56-6	Rubber & Plastics		A C
	PAH	Several	Rubber		C E
PVC	Polyvinylchloride	9002-86-2	Use as design material. PVC can still be used for insulation on leads and cables if no better alternatives are found	0,1 %	E
Biocides in water-based cutting fluids/coolants	Formaldehyde releasing agents, triazine-derivatives	Several	In prolonging the life-time of water-based cutting fluids. The concentration of free formaldehyde should not exceed 50 ppm		A C
Cadmium	Cadmium	7440-43-9	All	0,1 %	C E
	Cadmium compounds	Several			C E
Lead	Lead	7439-92-1	All	0,1 %	T N
	Lead compounds	Several			T N
Nickel	Nickel	7440-02-0	All	0,1 %	T A C
	Nickel compounds	Several			T A C
Beryllium	Beryllium	7445-41-7	In electronic components, copper strips and welding electrodes	0,1 %	C
	Beryllium compounds and alloys	Several			C
Selenium	Selenium	7782-49-2	Pigments in plastics, photo electrical coatings, diodes, rectifiers	0,1 %	T
	Selenium compounds	Several			T
Hexavalent chromium - Chromium (6+) and Chromium compounds	CrO ₃ , Chromic acid, chromates	Several	All	0,1 %	C E
Antimony trioxide	Sb ₂ O ₃	1309-64-4	Used as a flame retardant in plastics	0,1 %	C
Radioactive elements	Thorium	7440-29-1	All - special attention to handling of welding electrodes containing thorium	0,1 %	C
	Other radioactive elements	Several			
Perfumes	d-Limonene	5989-27-5	In cleaning agents because of the allergenic effect	0,1 %	A
	Linalool	78-70-6			
	Cinnamaldehyde (alpha-hexyl)	101-86-0			
	Eugenol	97-53-0			
	Benzyl Benzoate	120-51-4			

Substance/preparations	Substances 1)	CAS no. 2)	Restricted process or product content and related regulations 3)	Concentration limit	Risk 4)
Perfumes	Benzyl alcohol Salicylic, benzyl-ester Geraniol Citronellol Coumarin Cinnamaldehyd, alpha-pentyl Citral Hydroxycitronellal Isoeugenol Benzyl cinnamate Methyl heptin carbonat Cinnamaldehyd Amylcinnamyl alcohol	100-51-6 118-58-1 106-24-1 106-22-9 91-64-5 122-40-7 5392-40-5 107-75-5 97-54-1 103-41-3 111-12-6 104-54-1 101-85-9	In cleaning agents because of the allergenic effect	0,1 %	A
SVHC substances	CMR (Carcinogenic, Mutagen, Reproduction damaging) category 1 and 2 Toxic to the environment (N, R50/53) Endocrine disruptors, hormonally active agents	Several	According to REACH regulation 1907/2006/EC, 10)	0,1 %	E C R T

Notes:

- 1) The list is an incomplete list of substances mentioned in substance/preparation
- 2) CAS no = Chemical Abstract Service registry number. Internationally applied scientific index identifying chemical substances
- 3) Use for analytical purposes by skilled personnel in chemical laboratories is accepted
- 4) A = Allergenic, C = Carcinogenic, T = Toxic, E = Environmentally hazardous, N = Neurotoxic, O = Ozone depleting, R = Reprotoxic
- 5) EC directive 2002/95/EC (**RoHS**) on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("a maximum concentration value of 0,1 % by weight in homogeneous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) and of 0,01 % by weight in homogeneous materials for cadmium shall be tolerated"), effective as of 1. July 2006
- 6) Nitrite can form carcinogenic nitrosamines if amines are present
- 7) The Montreal Protocol on substances that deplete the ozone layer, Beijing 1999
- 8) Kyoto Protocol, 1997, Kyoto
- 9) EC directive 1994/62/EC on packaging
- 10) EC Regulation 1907/2006/EC (REACH)
- 11) Stockholm Convention 2001/05/01