Samsung Electronics

Standards for Control of Substances concerning Product Environment

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Environment Strategy Team

Customer Satisfaction & Environment Center

Contents

Chapter 1 General Provision

Article 1 (Preface)

In order to sell our products to the world marketplace, Samsung Electronics ('The Company') must guarantee and verify environmental compliance for all parts and components of finished products to prevent adverse effects on the environment and the health. The following list of substances with environmental impacts was developed based on global regulatory and requirements of customers.

Article 2 (Purpose)

This document "Standards for Control of Substances concerning Product Environment (0QA-2049)" is to provide information of substances with Environmental Impacts in parts, raw materials, packages, batteries and other components of Samsung Electronics products. According to prohibition and restriction of specified substances in standards, Samsung Electronics improves parts and raw materials and develops the products which are friendly on the environment and the health.

Article 3 (Scope)

1. This standard applies to all parts, components, and materials (including packaging materials), which are used to develop products to put in the market. The application scope is specified by substances in the standard.

2. This standard applies to all products designed, developed and manufactured by the company regardless of region.

Articles 4 (Definitions)

1. Substances concerning Product Environment

Substances which are restricted and controlled to use by the company due to their negative effects on the environment and the health

2. Classification of Substances concerning Product Environment

1) Class I: Substances are regulated by EU RoHS Directive 2002/95/EC. These substances are restricted to be used in products

2) Class II: Substances are managed by regulation or convention other than EU RoHS Directive. These substances are restricted to be used in products

3) Class III: Substances which are voluntary phase-out due to the potentially negative effects to the environment or the health

4) Others: Substances need to be monitored because these substances are expected to regulate in the future

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3. Exceptions

The exceptions of Class I and II are adopted from the decisions of EU RoHS Directive and other legislations concerning product environment. The exceptions of Class III and others are adopted when they are needed to maintain specific quality, characteristic, appearance or performance of products. The exceptions can be used until appropriate measures or substitutes are developed.

4. Threshold Limit

The maximum concentration level at which the presence of a substance can be tolerated in a material. The threshold limits are provided for detection sensitivity errors of instrumental measurements and impurities in a material. When the supplies are exceeding the threshold limit of restricted substances, Samsung Electronics regards the supplies as the intentional use of restricted substances and prohibits the supplier from the delivery of supplies.

5. Precision Analysis

Precision Analysis is a test using equipments with high precision and may differ from screening test such as using XRF equipment which indicates approximate concentration of certain substances. Detailed analysis equipment means such as AAS, ICP, IC and UV/VIS for Inorganic compounds and GC/MS for organic compounds.

1) Organic Materials

Organic materials are a general term of organic compounds which are chemical compounds whose molecules contain carbon. It covers plastic, rubber, ink and so on.

2) Inorganic Materials

Inorganic materials are a general term of inorganic compounds which are chemical compounds except organic compounds. It covers metal, alloy, ceramic, and so on.

* AAS: Atomic Absorption Spectroscopy
* ICP: Inductively Coupled Plasma
* UV-VIS: Ultraviolet-Visible Spectroscopy
* GC/MS: Gas Chromatography/Mass Spectrometry
* IC: Ion Chromatography

Article 5 (Standard for Operation and Management)

1. The company manages Substances concerning Product Environment by classifying them as Class I, II, III and others. The substances are restricted from application date. Standards and methods of control are regularly revised.

2. The company will provide a grace period for improvements until substitutes or other methods are available.

3. The suppliers submit an approval sheet with the contents of Substance concerning Product Environment of the new supplies on in written document and comply with the Standards for Control of Substances concerning Product Environment.

Note: Substances in Class I shall be confirmed to comply with the threshold limit, by the precision analysis data. Substances in Class II, III and others shall not be confirmed by precision analysis data. When Samsung Electronics requires, suppliers shall provide precision analysis data to Samsung Electronics and prove to comply with the threshold limits.

Chapter 2 Standard for Control of Substances concerning Product Environment

Article 6 (Standard for Control of Substances in Products)

1. This standard applies to the unit of homogeneous materials in parts of being supplied by suppliers.

* Homogeneous material means a unit that can not be mechanically disjointed in single materials.

2. List of Control of substances in products

Table 1. Banned and restricted substances

*Class I : Substances are regulated by EU RoHS Directive 2002/95/EC. These substances are restricted to be used in products.

Class	Substance / Material	Regulation
I	Cadmium and its compounds	EU RoHS, Packaging, Battery Directive; OSPAR Priority Chemicals; Korea RoHS; Japan J-Moss; US/CA SB-20/50
	Lead and its compounds	EU RoHS, Packaging, Battery Directive; California Proposition 65; OSPAR Priority Chemicals; Korea RoHS; Japan J-Moss; US/CA SB-20/50
	Mercury and its compounds	EU RoHS, Packaging, Battery Directive; OSPAR Priority Chemicals; Korea RoHS; China MII Method; Japan J-Moss; US/CA SB-20/50
	Hexavalent chromium and its compounds	EU RoHS, Packaging Directive; OSPAR Priority Chemicals; Korea RoHS; China MII Method; Japan J-Moss; US/CA SB-20/50
	Polybrominated biphenyls (PBBs)	EU RoHS Directive; OSPAR Priority Chemicals; Korea RoHS; China MII Method; Japan J-Moss;
	Polybrominated diphenylethers (PBDEs)	EU RoHS Directive; OSPAR Priority Chemicals; Korea RoHS; China MII Method; Japan J-Moss

Table 2. Banned and restricted substances

*Class II: Substances are managed by regulation or convention other than EU RoHS Directive.
These substances are restricted to be used in products.

Class	Substance / Material	Regulation
II	Polychlorinated biphenyls (PCBs) Polychlorinated terphenyls (PCTs) Polychrlorinated naphthalenes (PCNs, with three or more chlorine substituents)	ANNEX XVII of REACH Regulation (EC) No 1907/2006; Japan Law concerning the evaluation of chemical substances
	Ozone layer depleting substances (CFCs, HCFCs, Halons)	Montreal Protocol EC 1005/2009 (EC 2037/2000) US Clean Air Act
	Asbestos	ANNEX XVII of REACH Regulation (EC) No 1907/2006;
	Formaldehyde	Austria - BGB I 1990/194: Formaldehydverordnung, §2, 12/2/1990; US CA Code of Regulation §93120
	Short-chain chlorinated paraffins (Alkane 10～13 carbon chain)	ANNEX XVII of REACH Regulation (EC) No 1907/2006;
	Azo colorants	ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Nickel and its compounds	ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Organic tin compounds	EU REG. NO. 276/2010 ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Arsenic and its compounds	ANNEX XVII of REACH Regulation (EC) No 1907/2006
	PFOSs(Perfluorooctane Sulfonates)	ANNEX XVII of REACH Regulation (EC) No 1907/2006 Commission Regulation (EC) No 552/2009;
	DMF(Dimethylfumarate)	COMMISSION DECISION 2009/251/EC

Table 3. Voluntary phase-out of substances

*Class III: Substances which are voluntary phase-out due to the potentially negative effects to the environment or the health

Class	Substance / Material	Application	Start of Phase-out	Phase-out Date
III	TBBP-A	**All products**	-	January, 2008
	Brominated Flame Retardants	Printed wiring boards in **mobile phones**	-	July, 2007
		Mobile phones (including accessories and chargers)	January, 2009	January, 2010
		MP3 players (including accessories)	July, 2009	
		Digital cameras and Camcorders: main PWB and case	January, 2010	July, 2010
		Notebooks	January, 2011	January, 2012
	PVC	Mobile phones (including accessories and chargers)	July, 2009	April, 2010
		MP3 players (including accessories)		
		Digital cameras and Camcorders: internal wires	January, 2010	July, 2010
		TVs: Internal wires (except LCD/LED panel and PDP module)	September, 2009	January, 2011
		Notebooks (except power cord and adapter)	January, 2011	January, 2012
		Monitors: internal wires (except panel)		
		Home theaters: internal wires		
	Phthalates	Mobile phones (including accessories and chargers)	January, 2010	January, 2011
		MP3 players (including accessories)		
		Digital cameras and Camcorders: internal wires	January, 2012	January, 2013
		TVs: internal wires (except LCD/LED panel and PDP module)		
		Notebooks (except power cord and adapter)		
		Monitors: internal wires (except panel)		
		Home theaters: internal wires		
		Printers (>25g plastic part (excepting power cord)	-	June,2013
	Antimony Compounds	Mobile phones (including accessories and chargers)	January, 2012	January, 2013
		MP3 players (including accessories)		
		Digital cameras and Camcorders: Main PWB, case and internal wires		
		TVs: internal wires (except LCD/LED panel and PDP module)		
		Notebooks (except power cord and adapter)		
		Monitors: internal wires (except panel)		
		Home theaters: internal wires		
	Beryllium and its compounds	Mobile phones , MP3 players	January, 2010	January, 2011
		All products	January, 2012	January, 2013
	Cobalt dichloride	All product	-	Jun.2011
	Chlorinated Flame Retardants	Mobile phones, MP3 players	January.2011	January, 2012

Notes:

- **Start of Phase-out**: Date from which **ALL NEW MODELS starting development** will be free of target substances according to application scope above. The phase-out is not applied to THE MODELS already developed and in development before the start date of phase-out.

- **Phase-out Date**: Date from which **ALL NEW MODELS put on the market** will have achieved phase-out according to application scope above.

Table 3. Monitored substances

Class	Substance / Material	Application Product	Remarks
Others	4,4-MDA	All products	Substances need to be monitored such as EU REACH SVHC candidate list or substances which are expected to regulate in the future
	Perchlorate Compounds		
	Radioactive Substances		
	TCEP		
	Anthracene		
	Green House Gases		
	PFOAs		
	Bisphenol A		
	MCCP		
	Triclosan		
	PCP		
	(DBHP)BT		
	Diboron Trioxide		
	TGIC		
	Substances in SVHC candidate list *		

* Substances in EU REACH SVHC Candidate list (refer to Appendix-3)
(http://echa.europa.eu/web/guest/candidate-list-table)

3. Standard for Control of Class I Substances

Note: ppm = mg/kg by weight

Exemptions of control of substances and Examples of substances and its compounds: Annex 1 and 2

1) Cadmium and its compounds (Cd)

Example of use	pigment, anti-corrosion surface treatment, electric and electronic materials, optical material, stabilizer, stabilizer for PVC, plating, electrode, etc.	
Application	Organic materials	Inorganic materials
Threshold Limit	5 ppm	80 ppm
Implementation date	January 2005	
Test Equipment	ICP, AAS	
Test Method	IEC62321(Ed.2008), EPA-3051, EPA-3052	

2) Lead and its compounds (Pb)

Example of use	rubber hardener, pigment, paint, lubricant, plastic stabilizer, battery material, free-machining alloy, free-cutting steels, optical materials, X-ray shielding in CRT glass, electrical solder materials, mechanical solder, curing agent, vulcanizing agent, resin stabilizer, plating, metal alloy, resin additives	
Application	Organic materials	Inorganic materials
Threshold Limit	100 ppm	800 ppm
Implementation date	January 2005	
Test Equipment	ICP, AAS	
Test Method	IEC62321(Ed.2008), EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004	

3) Mercury and its compounds (Hg)

Example of use	fluorescent bulb, contact point material, pigment, anti-corrosion, high-efficiency phosphor, antibacterial treatment	
Application	Organic materials	Inorganic materials
Threshold Limit	800 ppm	800 ppm
Implementation date	January 2005	
Test Equipment	ICP, AAS	
Test Method	IEC62321(Ed.2008), EPA-3051, EPA-3052	

4) Hexavalent chromium and its compounds (Cr^{+6})

Example of use	pigment, paint, ink, catalyst, plating, anti-corrosion surface treatment, dye, paint dryer, surface treatment, chromate treatment, paints adhesion enhancement, anti-corrosion	
Application	Organic materials	Inorganic materials
Threshold Limit	800 ppm	800 ppm
Implementation date	February 2005	
Test Equipment	UV-VIS, IC	
Test Method	IEC62321(Ed.2008) EPA-3060A, DIN 53314,ISO 3856-5,ISO 3613	

Notes: A judgment of containing Hexavalent chromium is based on the Spot-Test which is indicated by Samsung Electronics.

5) Polybrominated biphenyls (PBBs)

Example of use	flame retardant
Application	Organic materials
Threshold Limit	900 ppm
Implementation date	February 2005
Test Equipment	GC/MS
Test Method	IEC62321(Ed.2008), EPA-3540C, EPA-3545, EPA-3550B

6) Polybrominated diphenylethers (PBDEs)

Example of use	flame retardant
Application	Organic materials
Threshold Limit	900 ppm
Implementation date	February 2005
Test Equipment	GC/MS
Test Method	IEC62321(Ed.2008), EPA-3540C, EPA-3545, EPA-3550B

Notes: All sorts of PBDEs including Deca-BDE are banned.

4. Standard for Control of Class II Substances

Note: ppm = mg/kg by weight

Exemptions of control of substances and Examples of substances and its compounds: Annex 1 and 2

7) Polychlorinated biphenyls (PCBs) / Polychlorinated Terphenyls (PCTs) / Polychlorinated naphthalences (PCNs): with 3 or more chlorine substituents

Example of use	insulation oil, lubricant oil, electrical insulation medium, solvent, electrolytic solution, stabilizer, electricity, flame retardant, water-resistant, insulator
Application	All parts
Threshold Limit	No intentional use
Implementation date	May 14, 2004
Test Equipment	GC/MS, GC/ECD
Test Method	EPA-8082, EPA-1668, KS C 2375, DIN EN 61619

8) Ozone depleting substances: CFCs, HCFCs, Halons (ODSs)

Example of use	refrigerant, foaming agent, extinguishant, solvent cleaner
Application	All parts
Threshold Limit	No intentional use
Implementation date	May 14, 2004
Test Equipment	GC/ECD
Test Method	EPA-8021B, EPA-524.1, EPA-524.2

Notes: HCFC-22 is prohibited from using and containing in products placing on the markets such as EU which regulate ODS by the law.

9) Asbestos and its compounds

Example of use	brake lining pad, insulator, filler, abrasive, pigment, paint, talc, adiabatic material
Application	All parts
Threshold Limit	No intentional use
Implementation date	May 14, 2004
Test Equipment	Electron Microscope (TEM or SEM), Phase Contrast Microscopy, X-Ray Diffractometer, Thermal analysis
Test Method	EPA-0435, JIA-A 1481, NIOSH NMAM #7400, OSHA ID-160, HSE MDHS 39/4

10) Formaldehydes

Example of use	adhesive, antiseptic solution, preservative	
Application	Wooden products	Fiber
Threshold Limit	0.1 ppm (in a test chamber)	0.1 ppm (in a test chamber)
Implementation date	May 14, 2004	April 1, 2011
Test Equipment	HPLC, Spectrometer, Photoelectric colorimeter	
Test Method	EPA TO-11A, ISO 16000-3, KS M ISO 16000-3, KS M 1998-1~4	

Notes: Products containing composite woods for the U.S market comply with the formaldehyde threshold limit of the California Code of Regulation §93120. This regulation is applied to composite woods (HWPW-CC, HWPW-VC), particle boards (PB) and MDF (Medium Density Fiberboard) excluding woods for packages and pallets.

11) Short-chain chlorinated paraffins: Alkane 10~13 Carbon chain (SCCPs)

Example of use	plasticizer for PVC, flame retardant	
Application	Paints, waxes, oils, rubbers, plastics and textiles	All parts
Threshold Limit	1,000 ppm	1,000ppm
Implementation date	May 14, 2004	April 1, 2011
Test Equipment	GC/MS, GC/ECD	
Test Method	EPA 3540C, EPA 3550C, EPA 8081B, EPA 8270D	

12) Azo colorants

Example of use	pigment, dyes, colorants
Application	Textiles and leather articles which may come into direct and prolonged contact with the skin (e.g. belt, strap, ear phone, head set, shoulder string)
Threshold Limit	30 ppm
Implementation date	May 14, 2004
Test Equipment	GC/MS, GC/MSD, HPLC
Test Method	EN 14362-1~2, CEN ISO/TS 17234

13) Nickel and its compounds (Ni)

Example of use	pigment, paint, optical thin film, reflection coating, battery materials, conductive, materials, semiconductors, surface treatment, magnetic thin film, nickel plating, electrode, catalyst, alloy	
Application	External components intended to come into direct and prolonged contact with the skin (e.g. belt, strap, ear phone, head set, shoulder string, button, key, ring, decoration)	
Threshold Limit	0.5μg-Ni/cm^2 per week	0.28 μg-Ni/cm^2 per week
Implementation date	May 14, 2004	July 1, 2012
Test Equipment	ICP/OES	
Test Method	EN 1811:1999	EN 1811:2011

Notes : Nickel emissions management is carried out based on analysis report

14) Organic tin compounds

Example of use	anti-septic, anti-oxidizer, antibacterial and antifungal agents, anti-foulant, paint, pigment, anti-staining	
Application	Paints, inks, preservatives and fungicides	All parts
Threshold Limit	No intentional use	1,000ppm
Implementation date	May 14, 2004	January 1, 2012
Test Equipment	GC/MS, GC-FPD	
Test Method	EPA 0280, DIN 38407	

15) Arsenic compounds and its compounds (As)

Example of use	pigment, paint, dye, anti-foamer for glass, GaAs semiconductor
Application	Wooden products, totally or partly submerged parts
Threshold Limit	No intentional use
Implementation date	May 14, 2004
Test Equipment	ICP, AAS
Test Method	EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2 EPA200.8, EPA6020, EPA6010B etc.

16) Perfluorooctane Sulfonates (PFOSs)

Example of use	cleaner, Insulating oil, pigment, flux, adhesive, fluorinated mold spatt, PTFE
Application	All parts
Threshold Limit	1,000 ppm (1 ㎍/㎡ for textiles and coated materials)
Implementation date	May 1, 2008
Test Equipment	LC/MS
Test Method	Acid/Metal Salt/ Amide:USEPA 3540C

Note: PFOS Chemical formula: C8F17SO2X [X = OH, Metal salt (O-M+)], Halogenated substances, including polymers and amide derivatives

17) DMF (Dimethylfumarate)

Example of use	Silica-gel, texture/leather, wood, poly urethane
Application	All parts
Threshold Limit	0.1 mg/kg
Implementation date	May 1, 2009
Test Equipment	GC/MS
Test Method	EPA-3540C

5. Standard for Control of Class Ⅲ substances

Note: ppm = mg/kg by weight

Exemptions of control of substances and Examples of substances and its compounds: Annex 1 and 2

No	Substance	Application	Threshold Limit	Test Equipment	Test Method	Example of use
18	Tetrabromo bisphenol-A (TBBP-A)	Organic materials	900 ppm	GC/MS LC/MS	EPA-3540C, EPA-3545 EPA-3550B	flame retardant
19	Brominated flame retardants (BFRs)	Organic materials	No intentional use (Br 900ppm)	IC	EN 50267-2-2, EN 14582:2007, ASTM D7359	flame retardant
20	Polyvinyl chloride (PVC)	Organic materials	No intentional use (Cl 900ppm)	FT-IR	KS 0210	wire jacket
21	Phthalates	All parts	1,000 ppm	GC/MS HPLC	ASTM D3421-75, EN 14372:2004, US EPA 3540C, US CPSCCH-C1001-09.1,EPA 0506, KSM 1991	plasticizer
22	Antimony and compounds	All parts	700 ppm	ICP	EPA 3050B, ISO 8124-3, EPA 3052, KS K 0852, KS K 0731, EPA 7062	flame retardant
23	Beryllium and its compounds	All parts	1,000 ppm	ICP	EPA 3050B, ISO 8124-3, EPA 3052, KS K 0852, KS K 0731 EPA 7062	Connector
24	Cobalt dichloride	All parts	No intentional use (Co 1,000ppm)	ICP	EPA-3052	silica gel, humidity I ndicator
25	Chloride Flame Retardants	Organic materials	No intentional use (Cl 900ppm)	IC	EN 50267-2-2, EN 14582:2007, ASTM D7359	flame retardant

Note: Phase-out date of each substance in applications/products follows the Phase-out date of Table 2 in Article 9.

Article 7 (Standard for Control of Substances in Packaging Materials)

1. Definition of Packaging Materials

'Packaging Material' means the secondary materials which are used for the storage, protection, handling and delivery products. This packaging standard covers the final materials which are delivered to the consumer.

2. Standard for Control of Substances in Packaging Materials

Note:ppm = mg/kg by weight

*Not presented in a separate case management standards Article 9 (Standard for Control of Substances in Products) should be applied to the management criteria.

Exemptions of control of substances and Examples of substances and its compounds: Annex 1 and 2

1) Cadmium, Lead, Mercury and Hexavalent chromium (Cd, Pb, Hg and Cr^{+6})

Example of use	Refer to Detailed example of use of Class Ⅰ substances in products
Application	All packaging materials
Threshold Limit	80 ppm (Sum of concentrations of Cd, Pb, Hg and Cr+6)
Test Equipment	ICP, AAS
Test Method	IEC62321(Ed.2008), EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004

2) Ozone depleting substances: CFCs, HCFCs, Halons (ODSs)

Example of use	foam blowing agent
Application	All packaging materials
Threshold Limit	No intentional use
Test Equipment	GC/ECD
Test Method	EPA-8021B, EPA-524.1, EPA-524.2

3) Polyvinyl chloride (PVC)

Example of use	flame retardant
Application	All packaging materials
Threshold Limit	No intentional use
Test Equipment	FT-IR
Test Method	KS 0210

4) Brominated flame retardants (BFRs)

Example of use	flame retardant
Application	All packaging materials
Threshold Limit	Br : 900ppm
Test Equipment	IC
Test Method	EN 50267-2-2, EN 14582:2007, ASTM D7359

5) Cobalt dichloride ($CoCl_2$)

Example of use	silica gel, humidity Indicator
Application	Desiccant (Silica gel), Humidity Indicator
Threshold Limit	No intentional use (Co 1,000ppm)
Test Equipment	ICP
Test Method	EPA-3052

Article 8 (Standard for Control of Substances in Batteries)

1. Definition of batteries

Batteries mean a finalized product unit that is consist of cell and battery pack. This standard covers accumulators also.

2. Standard for Control of Substances in Batteries

Note: ppm = mg/kg by weight in battery

*Not presented in a separate case management standards Article 9 (Standard for Control of Substances in Products) should be applied to the management criteria

Exemptions of control of substances and Examples of substances and its compounds: Annex 1 and 2

1) Cadmium and its compounds (Cd)

Example of use	Refer to Detailed example of use of Class Ⅰ substances in products
Application	Batteries and accumulators
Threshold Limit	10 ppm
Test Equipment	ICP, AAS
Test Method	IEC62321(Ed.2008), EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004

2) Lead and its compounds (Pb)

Example of use	Refer to Detailed example of use of Class Ⅰ substances in products
Application	Batteries and accumulators
Threshold Limit	40 ppm
Test Equipment	ICP, AAS
Test Method	IEC62321(Ed.2008), EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004

Notes: Lead-acid accumulators are exempted from the threshold limit.

3) Mercury and it compounds (Hg)

Example of use	Refer to Detailed example of use of Class Ⅰ substances in products
Application	Batteries and accumulators
Threshold Limit	1 ppm (button cell 20,000 ppm)
Test Equipment	ICP, AAS
Test Method	IEC62321(Ed.2008), EPA-3051, EPA-3052

[Annex 1] Exemptions (Substances in Products 1/9)

[Annex 1] Exemptions (Substances in Products 1/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	-
1(a)	For general lighting purposes < 30 W : 5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011 until 31 December 2012; 2,5 mg shall be used per burner after 31 December 2012
1(b)	For general lighting purposes≥ 30 W and < 50 W: 5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011
1(c)	For general lighting purposes≥ 50 W and < 150 W: 5 mg	-
1(d)	For general lighting purposes≥150 W: 15 mg	-
1(e)	For general lighting purposes with circular or square structural shape and tube diameter≤ 17 mm	No limitation of use until 31 December 2011; 7 mg may be used per burner after 31 December 2011
1(f)	For special purposes: 5 mg	-
2(a)	Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp):	
2(a)(1)	Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 5 mg	Expires on 31 December 2011; 4 mg may be used per lamp after 31 December 2011
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter≥ 9 mm and ≤17 mm (e.g. T5): 5 mg	Expires on 31 December 2011; 3 mg may be used per lamp after 31 December 2011
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and≤ 28 mm (e.g. T8): 5 mg	Expires on 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011

[Annex 1] Exemptions (Substances in Products 2/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
2(a) (4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg	Expires on 31 December 2012; 3,5 mg may be used per lamp after 31 December 2012
2(a) (5)	Tri-band phosphor with long lifetime (≥25 000 h): 8 mg	Expires on 31 December 2011; 5 mg may be used per lamp after 31 December 2011
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b) (1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2012
2(b) (2)	Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b) (3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
2(b) (4)	Lamps for other general lighting and special purposes (e.g. induction lamps)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):	-
3(a)	Short length (≤ 500 mm)	No limitation of use until 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011
3(b)	Medium length (> 500 mm and≤ 1 500 mm)	No limitation of use until 31 December 2011; 5 mg may be used per lamp after 31 December 2011
3(c)	Long length (> 1 500 mm)	No limitation of use until 31 December 2011; 13 mg may be used per lamp after 31 December 2011

[Annex 1] Exemptions (Substances in Products 3/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
4(a)	Mercury in other low pressure discharge lamps (per lamp)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
4(b)	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:	-
4(b)-I	P≤ 155 W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(b)-II	155 W < P≤ 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(b)-III	P > 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(c)	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):	-
4(c)-I	P≤ 155 W	No limitation of use until 31 December 2011; 25 mg may be used per burner after 31 December 2011
4(c)-II	155 W < P≤ 405 W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(c)-III	P > 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011

[Annex 1] Exemptions (Substances in Products 4/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)	Expires on 13 April 2015
4(e)	Mercury in metal halide lamps (MH)	-
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	-
5(a)	Lead in glass of cathode ray tubes	-
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	-
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	-
6(b)	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight	-
6(c)	Copper alloy containing up to 4 % lead by weight	-
7(a)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)	-
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	-
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	-

[Annex 1] Exemptions (Substances in Products 5/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	-
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	-
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	-
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	-
11(a)	Lead used in C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	Lead in white glasses used for optical applications	-

[Annex 1] Exemptions (Substances in Products 6/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	-
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight	Expires on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	-
16	Lead in linear incandescent lamps with silicate coated tubes	Expires on 1 September 2013
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	-
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) 2 MgSi 2 O 7 :Pb)	Expires on 1 January 2011
18(b)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi 2 O 5 :Pb)	-

[Annex 1] Exemptions (Substances in Products 7/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)	Expires on 1 June 2011
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	Expires on 1 June 2011
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	-
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	May be used in spare parts for EEE placed on the market before 24 September 2010
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	-
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	-
26	Lead oxide in the glass envelope of black light blue lamps	Expires on 1 June 2011
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers	Expired on 24 September 2010
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1)	-

[Annex 1] Exemptions (Substances in Products 8/11)

1. Exemptions of Class I

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	-
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	-
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	-
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	-
34	Lead in cermet-based trimmer potentiometer elements	-
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	Expired on 1 July 2010
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	-
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	-
39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for use in solid state illumination or display systems	Expires on 1 July 2014

[Annex 1] Exemptions (Substances in Products 9/11)

1. Exemptions of Class I : Equipment utilising or detecting ionising radiation

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
1	Lead, cadmium and mercury in detectors for ionising radiation.	-
2	Lead bearings in X-ray tubes.	-
3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	-
4	Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons.	-
5	Lead in shielding for ionising radiation.	-
6	Lead in X-ray test objects.	-
7	Lead stearate X-ray diffraction crystals.	-
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers.	-

1. Exemptions of Class I : Sensors, detectors and electrodes

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	-
1b	Lead anodes in electrochemical oxygen sensors.	-
1c	Lead, cadmium and mercury in infra-red light detectors.	-
1d	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	-

[Annex 1] Exemptions (Substances in Products 10/11)

1. Exemptions of Class I : Sensors, detectors and electrodes

Note : Exemptions of Class I substances are based on Annex of EU RoHS Directive.

Exemption		Scope and dates of applicability
9	Cadmium in helium-cadmium lasers.	-
10	Lead and cadmium in atomic absorption spectroscopy lamps.	-
11	Lead in alloys as a superconductor and thermal conductor in MRI.	-
12	Lead and cadmium in metallic bonds to superconducting materials in MRI and SQUID detectors.	-
13	Lead in counterweights.	-
14	Lead in single crystal piezoelectric materials for ultrasonic transducers.	-
15	Lead in solders for bonding to ultrasonic transducers.	-
16	Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or relay.	-
17	Lead in solders in portable emergency defibrillators.	-
18	ead in solders of high performance infrared imaging modules to detect in the range 8-14 μ.m.	-
19	Lead in Liquid crystal on silicon (LCoS) displays.	-
20	Cadmium in X-ray measurement filters.	-

[Annex 1] Exemptions (Substances in Products 11/11)

2. Exemptions of Class II

Subs	Exemption	Remarks
PFOS	Photoresists or anti reflective coatings for photolithography process	
PFOS	Photographic coatings applied to films, papers, or printing plates	
PFOS	Mist suppressants for non-decorative hard chromium (VI)	

3. Exemptions of Class III

Subs	Exemption	Remarks
Sb	Added in ceramics for certain electronic components	
Sb	Used as a catalyst in polymeric materials for certain electronic components	
Sb	Additives in glass for preventing air bubbles and removing impurities.	
Be	Beryllium alloy used in connectors and certain electronic components	

[Annex 1] Exemptions (Substances in Packages)

Subs	Exemption	Remarks
Cd Pb Hg Cr^{6+}	- Packaging entirely made of lead crystal glass - Glass packaging is allowed to exceed where it complies with all the conditions established in (Commission Decision 2001/171/EC) · No lead, cadmium, mercury or hexavalent chromium shall be intentionally introduced during the manufacturing process · The packaging material may only exceed the concentration limits because of the addition of recycled materials	

[Annex 2] Examples of substances and its compounds (Class I)

1) Cadmium and its compounds

Substance name	CAS No
Cadmium	7440-43-9
Cadmium alloys	-
Cadmium oxide	1306-19-0
Cadmium sulfide	1306-23-6, 8048-07-5
Cadmium carbonate	513-78-0
Cadmium chloride	10108-64-2
Cadmium nitrate	10325-94-7
Cadmium nitrate tetrahydrate	10022-68-1
Cadmium sulfate	10124-36-4
Cadmium stearate	2223-93-0
Other cadmium compounds	-

2-1) Lead and its compounds

Substance name	CAS No
Lead; metal	7439-92-1
Lead/Tin alloy	-
Lead(Ⅱ)oxide	1317-36-8
Lead(Ⅳ)oxide	1309-60-0
Dilead trioxide	-
Lead(Ⅱ, Ⅳ)oxide	1314-41-6
Lead azide	13424-46-9
Lead(Ⅱ)fluoride	7783-46-2
Lead(Ⅱ)chloride	7758-95-4
Lead(Ⅳ)chloride	13463-30-4
Lead(Ⅱ)iodide	10101-63-0
Lead(Ⅱ)sulfide	1314-87-0
Lead(Ⅱ)cyanide	592-05-2
Lead fluoroborate	13814-96-5
Lead fluosilicate	25808-74-6
Lead nitrate	10099-74-8
Lead carbonate	598-63-0
Lead hydroxcarbonate	1344-36-1
Lead perchlorate	13637-76-8
Lead(Ⅱ) sulfate	7446-14-2, 15739-80-7
Lead oxide sulfate	12202-17-4
Lead(Ⅱ) phosphate	7446-27-7

[Annex 2] Examples of substances and its compounds (Class I)

2-2) Lead and its compounds

Substance name	CAS No
Lead thiocyanate	592-87-0
Lead(Ⅱ)acetate, trihydrate	6080-56-4
Lead(Ⅱ)acetate	301-04-2
Lead(Ⅳ)acetate	546-67-8
Lead oleate	1120-46-3
Lead stearate	1072-35-1, 7428-48-0
Lead(Ⅱ)metaborate	10214-39-8
Lead metasilicate	11120-22-2, 22569-74-0
Lead antimonite	13510-89-9
Lead arsenate(1:1)	7784-40-9
Lead(Ⅱ)arsenite	10031-13-7
Lead chromate; chrome yellow	1344-37-2
Lead molybdate	10190-55-3
Calcium plumbate	12013-69-3
Tetramethyl lead	75-74-1
Tetraethyl lead	78-00-2
Lead hydrocarbonate	1319-46-6
Lead selenide	12069-00-0
Lead (II) titanate	12060-00-3
Lead sulfate, sulphuric acid, lead salt	15739-80-7
Lead (II) chromate	7758-97-6
Other Lead compounds	-

3-1) Mercury and its compounds

Substance name	CAS No
Mercury	7439-97-6
Mercury alloys;amalgam	-
Mercury(Ⅰ)oxide	15829-53-5
Mercury(Ⅱ)oxide	21908-53-2
Mercury(Ⅰ)chloride	10112-91-1
Mercury(Ⅱ)chloride	7487-94-7
Mercury(Ⅱ)nitrate	10045-94-0
Mercury(Ⅰ)sulfate	7783-35-9
Mercury(Ⅱ)fulminate	628-86-4
Mercury(Ⅱ)acetate	1600-27-7
Methylmercury salts	e.g. 22967-92-6

[Annex 2] Examples of substances and its compounds (Class I)

3-2) Mercury and its compounds

Substance name	CAS No
Ethylmercury salts	-
Propylmercury salts	-
Phenylmercury salts	-
Methoxyethyl-mercury salts	-
Dialkylmercury	-
Diphenylmercury	587-85-9
Mercuric sulfide	1344-48-5
Mercuric chloride	33631-63-9
Other mercury compounds	-

4) Hexavalent chromium and its compounds

Substance name	CAS No
Chromium trioxide	1333-82-0
Lithium chromate	14307-35-8
Sodium chromate	7775-11-03
Potassium chromate	7789-00-6
Patassium chlorochromate	16037-50-6
Ammonium chromate	7788-98-9
Copper chromate	13548-42-0
Magnesium chromate	13423-61-5
Calcium chromate	13765-19-0
Strontium chromate	7789-06-02
Barium Chromate	10294-40-3
Lead chromate(Orange color pigments)	1344-38-3
Lead chromate(Yellow color pigments)	1344-37-2
Zinc chromate	12018-19-8, 13530-65-9, 14018-95-2
Sodium dichromate	10588-01-9
Potassium dichromate	7788-50-9
Ammonium dichromate	7789-09-05
Calcium dichromate	14307-33-6
Dichromic acid	13530-68-2
Copper chromite	12053-18-8
Zinc dichromate	-
Other chromium compound	-

[Annex 2] Examples of substances and its compounds (Class I)

5) Polybrominated biphenyls (PBBs)

Substance name	CAS No
2,2',4,4',5,5'-HEXABROMOBIPHENYL (PBB)	59080-40-9
2-BROMOBIPHENYL (PBB)	2052-07-05
3-BROMOBIPHENYL (PBB)	2113-57-7
4-BROMOBIPHENYL (PBB)	92-66-0
DECABROMOBIPHENYL (PBB)	13654-09-6
HEXABROMOBIPHENYL (PBB)	36355-01-8
P,P'-DIBROMOBIPHENYL (PBB)	92-86-4
POLYBROMINATED BIPHENYL MIXTURE (PBB)	67774-32-7
POLYBROMINATED BIPHENYLS (PBB)	59536-65-1
TETRABROMOBIPHENYL (PBB)	40088-45-7
Nonabiphenyl	27753-52-2
Heptabromobiphenyl	35194-78-6
Pentabrphenyl	56307-79-0
Tribromobiphenyl	59080-34-1
Octabromobiphenyl	61288-13-9
Other PBBs compounds	-

6) Polybrominated diphenylethers (PBDEs)

Substance name	CAS No
4-BROMODIPHENYL ETHER (PBDE)	101-55-3
DECABROMODIPHENYL ETHER (PBDE)	1163-19-5
DIBROMODIPHENYL ETHER (PBDE)	2050-47-7
HEPTABROMODIPHENYL ETHER (PBDE)	68928-80-3
HEXABROMODIPHENYL ETHER (PBDE)	36483-60-0
NONABROMODIPHENYL ETHER (PBDE)	63936-56-1
OCTABROMODIPHENYL ETHER (PBDE)	32536-52-0
PENTABROMODIPHENYL ETHER (PBDE)	32534-81-9
TETRABROMODIPHENYL ETHER (PBDE)	40088-47-9
TRIBROMODIPHENYL ETHER (PBDE)	49690-94-0
Other PBDEs compounds	-

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

7) Polychlorinated biphenyls (PCBs) / Polychlorinated Terphenyls (PCTs) / Polychlorinated naphthalences (PCNs): with 3 or more chlorine substituents

Substance name	CAS No
Polychlorinated bipheyls(PCB)	1336-36-3
Polychlorinated terpheyls(PCT)	61788-33-8
Polychlorinated naphtalenes(PCN)	70776-03-3
Trichloronaphthalenes	1321-65-9
Tetrachloronaphthalenes	1335-88-2
Pentachloronaphthalenes	1321-64-8
Octachloronaphthalenes	2234-13-1
Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)	76253-60-6
Monomethyl-dibromo-diphenyl methane (DBBT)	99688-47-8
Other PCBs, PCTs, PCNs and its compounds	-

8-1) Ozone layer depleting substances

Group	Substance name	CAS No
Group Ⅰ CFCs (Annex A/Ⅰ)	C F Cl3 (CFC-11)	75-69-4
	C F2 Cl2 (CFC-12)	75-71-8
	C2 F3 Cl3 (CFC-113)	76-13-1
	C2 F4 Cl2 (CFC-114)	1320-37-2
	C2 F5 Cl (CFC-115)	76-15-3
Group Ⅱ Other CFCs (Annex B/Ⅰ)	C F3 Cl (CFC-13)	75-72-9
	C2 F Cl5 (CFC-111)	354-56-3
	C2 F2 Cl4 (CFC-112)	28605-74-5
	C3 F Cl7 (CFC-211)	135401-87-5
	C3 F2 Cl6 (CFC-212)	3182-26-1
	C3 F3 Cl5 (CFC-213)	2354-06-5
	C3 F4 Cl4 (CFC-214)	2268-46-4
	C3 F5 Cl3 (CFC-215)	1652-81-9
	C3 F6 Cl2 (CFC-216)	662-97-2
	C3 F7 Cl (CFC-217)	422-86-6
Group Ⅲ Halons (Annex A/Ⅱ)	CF2 BrCl (halon-1211)	353-59-3
	CF3 Br (halon-1301)	75-63-8
	C2 F4 Br2 (halon-2402)	124-73-2
Group Ⅳ CTC (Annex B/Ⅱ)	C Cl4 (carbon tetrachloride)	56-23-5
Group Ⅴ 1,1,1-TCA (Annex B/Ⅲ)	C2 H3 Cl3 (methylchloroform)	71-55-6

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

8-2) Ozone layer depleting substances

Group	Substance name	CAS No
Group Ⅵ Methyl bromide (Annex E/Ⅰ)	C H3 Br (methyl bromide)	-
Group Ⅶ HBFCs (Annex C/Ⅱ)	C H F Br2 (HBFC-21 B2)	1868-53-7
	C H F2 Br (HBFC-22 B1)	1511-62-2
	C H2 F Br (HBFC-31 B1)	373-52-4
	C2 H F Br4 (HBFC-121 B4)	306-80-9
	C2 H F2 Br3 (HBFC-122 B3)	-
	C2 H F3 Br2 (HBFC-123 B2)	354-04-1
	C2 H F4 Br (HBFC-124 B1)	124-72-1
	C2 H2 F Br3 (HBFC-131 B3)	-
	C2 H2 F2 Br2 (HBFC-132 B2)	75-82-1
	C2 H2 F3 Br (HBFC-133 B1)	421-06-7
	C2 H3 F Br2 (HBFC-141 B2)	358-97-4
	C2 H3 F2 Br (HBFC-142 B1)	-
	C2 H4 F Br (HBFC-151 B1)	762-49-2
	C3 H F Br6 (HBFC-221 B6)	-
	C3 H F2 Br5 (HBFC-222 B5)	-
	C3 H F3 Br4 (HBFC-223 B4)	-
	C3 H F4 Br3 (HBFC-224 B3)	-
	C3 H F5 Br2 (HBFC-225 B2)	431-78-7
	C3 H F6 Br (HBFC-226 B1)	-
	C3 H2 F Br5 (HBFC-231 B5)	-
	C3 H2 F2 Br4 (HBFC-232 B4)	-
	C3 H2 F3 Br3 (HBFC-233 B3)	-
	C3 H2 F4 Br2 (HBFC-234 B2)	-
	C3 H2 F5 Br (HBFC-235 B1)	460-88-8
	C3 H3 F Br4 (HBFC-241 B4)	-
	C3 H3 F2 Br3 (HBFC-242 B3)	70192-80-2
	C3 H3 F3 Br2 (HBFC-243 B2)	70192-83-5
	C3 H3 F4 Br (HBFC-244 B1)	679-84-5
	C3 H4 F Br3 (HBFC-251 B1)	75372-14-4
	C3 H4 F2 Br2 (HBFC-252 B2)	460-25-3
	C3 H4 F3 Br (HBFC-253 B1)	421-46-5
	C3 H5 F Br2 (HBFC-261 B2)	51584-26-0
	C3 H5 F2 Br (HBFC-262 B1)	-
	C3 H6 F Br (HBFC-271 B1)	352-91-0

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

8-3) Ozone layer depleting substances

Group	Substance name	CAS No
Group Ⅷ HCFCs (Annex C/Ⅰ)	C H F Cl2 (HCFC-21)	75-43-4
	C H F2 Cl (HCFC-22)	75-45-6
	C H2 F Cl (HCFC-31)	593-70-4
	C2 H F Cl4 (HCFC-121)	354-14-3
	C2 H F2 Cl3 (HCFC-122)	354-21-2
	C2 H F3 Cl2 (HCFC-123)	306-83-2
	C2 H F4 Cl (HCFC-124)	2837-89-0
	C2 H2 F Cl3 (HCFC-131)	134237-34-6
	C2 H2 F2 Cl2 (HCFC-132)	25915-78-0
	C2 H2 F3 Cl (HCFC-133)	75-88-7
	C2 H3 F Cl2 (HCFC-141)	25167-88-8
	C H3 C F Cl2 (HCFC-141b)	1717-00-6
	C2 H3 F2 Cl (HCFC-142)	25497-29-4
	C H3 C F2 Cl (HCFC-142b)	75-68-3
	C2 H4 F Cl (HCFC-151)	1615-75-4
	C3 H F Cl6 (HCFC-221)	134237-35-7
	C3 H F2 Cl5 (HCFC-222)	134237-36-8
	C3 H F3 Cl4 (HCFC-223)	134237-37-9
	C3 H F4 Cl3 (HCFC-224)	134237-38-0
	C3 H F5 Cl2 (HCFC-225)	128903-21-9
	C F3 C F2 C H Cl2 (HCFC-225ca)	422-56-0
	CF2 Cl C F2 C H Cl F (HCFC-225cb)	507-55-1
	C3 H F6 Cl (HCFC-226)	134308-72-8
	C3 H2 F Cl5 (HCFC-231)	134190-48-0
	C3 H2 F2 Cl4 (HCFC-232)	134237-39-1
	C3 H2 F3 Cl3 (HCFC-233)	134237-40-4
	C3 H2 F4 Cl2 (HCFC-234)	127564-83-4
	C3 H2 F5 Cl (HCFC-235)	134237-41-5
	C3 H3 F Cl4 (HCFC-241)	134190-49-1
	C3 H3 F2 Cl3 (HCFC-242)	134237-42-6
	C3 H3 F3 Cl2 (HCFC-243)	134237-43-7
	C3 H3 F4 Cl (HCFC-244)	134190-50-4
	C3 H4 F Cl3 (HCFC-251)	134190-51-5
	C3 H4 F2 Cl2 (HCFC-252)	134190-52-6

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

8-4) Ozone layer depleting substances

Group	Substance name	CAS No
Group Ⅷ HCFCs (Annex C/Ⅰ)	C3 H4 F3 Cl (HCFC-253)	134237-44-8
	C3 H5 F Cl2 (HCFC-261)	134237-45-9
	C3 H5 F2 Cl (HCFC-262)	134190-53-7
	C3 H6 F Cl (HCFC-271)	134190-54-8
Group Ⅸ Bromochloromethane	C H2 Br Cl (Bromochloromethane)	-
Group Ⅹ New substances	C Br2 F2 (halon-1202)	-
	C3 H7 Br (n-propyl bromide)	-
	C2 H5 Br (Ethyl bromide	-
	C F3 I (Trifluoromethyl iodide)	-
	C H3 Cl (Methyl chloride)	-
	Other Ozone depleting substances and its compounds	-

9) Asbestos and its compounds

Substance name	CAS No
Actinolite	77536-66-4
Amosite (Grunerite)	12172-73-5
Anthophyllite	77536-67-5
Asbestos	1332-21-4
Chrysotile	12001-29-5
Crocidolite	12001-28-4
Tremolite	77536-68-6
Other Asbestos and its compounds	-

10) Formaldehydes

Substance name	CAS No
Formaldehyde	50-00-0
Formaldehyde, reaction products with Butylphenol	91673-30-2
Formaldehyde, Polymer with Bromophenol and (Chloromethyl)Oxirane	68541-56-0
Other Formaldehydes and its compounds	-

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

11) Short-chain chlorinated paraffins: Alkane 10~13 Carbon chain (SCCPs)

Substance name	CAS No
ALKANES, C10-12, CHLORO	108171-26-2
ALKANES, C10-13, CHLORO	85535-84-8
ALKANES, C10-14, CHLORO	85681-73-8
ALKANES, C10-21, CHLORO	84082-38-2
ALKANES, C10-26, CHLORO	97659-46-6
ALKANES, C10-32, CHLORO	84776-06-7
ALKANES, C12-13, CHLORO	71011-12-6
ALKANES, C12-14, CHLORO	85536-22-7
ALKANES, C6-18, CHLORO	68920-70-7
ALKANES, CHLORO	61788-76-9
Other Alkane 10-13 Carbon chain and its compounds	-

12) Azo colorants

Substance name	CAS No
2,4,5-trimethylaniline	137-17-7
2,4-diaminoanisole	615-05-4
2,4-toluenediamine	95-80-7
2-naphthylamine	91-59-8
3,3-dichlorobenzidine	91-94-1
3,3-dimethlbenzidine	119-93-7
3,3-dimethoxybenzidine	119-90-4
3,3-dmethyl-4,4-diaminodiphenylmethane	838-88-0
4,4-diaminodiphenylmethane	101-77-9
4,4-methylene-bis-(2-chloroaniline)	101-14-4
4,4-oxydianiline	101-80-4
4,4-thiodianiline	139-65-1
4-aminoazobenzene	60-09-03
4-aminodiphenyl	92-67-1
4-chloro-o-toluidine	95-69-2
5-nitro-o-toluidine	99-55-8
Benzidine	92-87-5
o-anisidine	90-04-0
ortho-Aminoazotoluene	97-56-3
ortho-toluidine	95-53-4
p-chloroaniline	106-47-8
p-cresidine	120-71-8
Other Azo and its compounds	-

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

13) Nickel and its compounds

Substance name	CAS No
Nickel	7440-02-0
Nickel(Ⅱ)oxide	1313-99-1
Nickel Sulfate	7786-81-4
Nickel chloride	7718-54-9
Other Nickel and its compounds	-

14-1) Organic tin compounds (TBT/TPT)

Substance name	CAS No
Tributyl tin (TBT)	56573-85-4
Triphenyl tin (TPT)	668-34-8
Tributyl tin oxide (TBTO)	56-35-9
Coplymer of alkyl(c=8) acrylate,methyl methacrylate and tributyltin methacrylate	67772-01-4
Methyl Methacrylate and tributyl tin methacrylate	-
Tributyl 2,3-dibromosuccinate	31732-71-5
Tributyl tin acetate	56-36-0
Tributyl tin bromide	1461-23-0
Tributyl tin chloride	1461-22-9, 7342-38-3
Tributyl tin fluoride	1983-10-4
Tributyl tin fumarate	6454-35-9
Tributyl tin laurate	3090-36-6
Tributyl tin naphthenate	85409-17-2
Tributyl tin phthalate	4782-29-0
Tributyl tin rosin salts	26239-64-5
Tributyl tin sulfamate	6517-25-5
Tributyltin cyclopentane carbonate=mixture	5409-17-2
Tributyltinmethacrylate	2155-70-6
Triphenyl tin acetate(fentin acetate)	900-95-8
Triphenyl tin bromide	56-35-9
Triphenyl tin chloride	639-58-7
Triphenyl tin chloro acetate	7094-94-2
Triphenyl tin fluoride(fentin fluoride)	379-52-2
Triphenyl tin hydroxide	76-87-9
Triphenyl tin N, N' -dimethyldithiocarbamate	1803-12-9
Triphenyltin fatty acid((9-11) salt)	18380-71-7, 18380-72-8, 47672-31-1, 94850-90-5
Trivutyl tin maleate	14275-57-1
Other Organic tin and its compounds	-

14-2) Organic tin compounds(DBT)

Substance name	CAS No
Dibutyl tin	1002-53-5
Dibutyltin dimaleate	10192-92-4
Dibutyltin diacetate	1067-33-0
Dibutyltin dilauryl mercaptide	1185-81-5
Dibutyltin dioleate	13323-62-1
Dibutyltin dipalmitate	13323-63-2
Dibutyltin disalicylate	14214-24-5
Di-n-butyltin bis(methyl maleate)	15546-11-9
Dibutytin di(2-ethylhexyl maleate)	15546-12-0
Di-n-butyltin di(monobutyl)maleate	15546-16-4
Bis (acetato) dibutyltin	17523-06-7
Dibutyltin dihexanoate	19704-60-0
Dibutyltin S,S'-bis (isooctyl mercaptoacetate)	26636-01-1
Dibutyltin bis(octylthioglycolate)	2781-09-1
Dibutyltin dibutoxide	3349-36-8
Dibutyltin dioctanoate	4731-77-5
Dibutyltin dibenzoate	5847-54-1
Dibutyltin distearate	5847-55-2
Diisobutyltin oxide	61947-30-6
Dibutyltin dichloride	683-18-1
Dibutyltin bis(benzyl maleate)	7324-74-5
Dibutyltin hydrogen borate	75113-37-0
Dibutyltin dilaurate	77-58-7
Dibutyltin maleate	78-04-6
Dibutyltin mercaptopropionate	78-06-8
Dibutyltin mercaptoacetate	78-20-6
Dibutyltin oxide	818-08-6
Dibutyltin linoleate	85391-79-3
Dibutyltin isooctanoate	85702-74-5
Dibutyltin linolenate	95873-60-2
Dibutyltin diisostearate	59963-28-9
Dibutyltin dibutyrate	28660-63-1
Dibutyltin bis(isooctylmaleate)	25168-21-2

[Annex 2] Examples of substances and its compounds (Class Ⅱ)

15) Arsenic compounds and its compounds

Substance name	CAS No
Diarsenic Pentoxide	1303-28-2
Diarsenic Trioxide	1327-53-3
Arsenic	7440-38-2
Arsenic acid disodium salt, Heptahydrate	10048-95-0
Arsenic acid, calcium salt	7778-44-1
Arsenic acid, copper salt	10103-61-4
Arsenic acid, diammonium salt	7784-44-3
Lead hydrogen arsenate	7784-40-9
Arsenic acid, magnesium salt	10103-50-1
Arsenic trichloride	7784-34-1
Arsenic trihydride	7784-42-1
Arsenious acid, copper(II) salt	10290-12-7
Arsenious acid, potassium salt	10124-50-2
Other Arsenic acid and its salts	-

16) Perfluorooctane Sulfonates (PFOSs)

Substance name	CAS No
Perfluoroctane Sulfonates (PFOSs) C8F17SO2X, where X = OR, NR or other derivative	-

17) DMF

Substance name	CAS No
Biocide dimethylfumarate	624-49-7

[Annex 2] Examples of substances and its compounds (Class Ⅲ)

18) Tetrabromobisphenol-A (TBBP-A)

Substance name	CAS No
3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	79-94-7
TBBA bis-(2-hydroxy-ethyl-ether)	4162-45-2
TBBA carbonate oligomer	28906-13-0
TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3
TBBA carbonate oligomer, phenoxy end capped	94334-64-2
TBBA-(2,3-dibromo-propyl-ether)	21850-44-2
TBBA, unspecified	30496-13-0
TBBA-bis-(allyl-ether)	25327-89-3
TBBA-bisphenol A-phosgene polymer	32844-27-2
TBBA-dimethyl-ether	37853-61-5
TBBA-epichlorhydrin oligomer	40039-93-8
TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
TBBA, 2,2-Bis(4-(2,3-Epoxypropyloxy)dibromophenyl) propane polymer	68928-70-1
TBBA-polycarbonate	156042-31-8

19-1) Brominated Flame Retardants and its compounds

Substance name	CAS No
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14)[Aliphatic/alicyclic brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15)[Aliphatic/alicyclic brominated compounds in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16)[Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls)]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17)[Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls) in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22)[Aliphatic/alicyclic chlorinated and brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42)[Brominated organic phosphorus compounds]	-
1,2-Bis(2,4,6-tribromo-phenoxy) ethane	37853-59-1
1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8
1,3-Butadiene homopolymer,brominated	68441-46-3
2,3-Dibromo-2-butene-1,4-diol	3234-02-4
2,4,6-tribromo-phenol	118-79-6
2,4,6-Tribromo-phenyl-allyl-ether	3278-89-5
2,4-Dibromo-phenol	615-58-7

[Annex 2] Examples of substances and its compounds (Class Ⅲ)

19-2) Brominated Flame Retardants and its compounds

Substance name	CAS No
2-Hydroxy-propyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2
Bis(2-ethylhexyl)tetrabromo-phtalate	26040-51-7
Bis(methyl)tetrabromo-phtalate	55481-60-2
Brominated epoxy resin end-capped with tribromophenol	135229-48-0
Brominated epoxy resin end-capped with tribromophenol	139638-58-7
Brominated polystyrene(BRPS)	57137-10-7
Brominated trimethylphenyl-lindane	59789-51-4
Bromo dichloromethane	75-27-4
Bromo-/Chloro-alpha-olefin	82600-56-4
Bromo-/Chloro-paraffins	68955-41-9
Chlorinated and brominated phosphate ester	125997-20-8
Decabromo-diphenyl-ethane	84852-53-9
Dibromo-neopentyl-glycol	3296-90-0
Dibromo-propanol	96-13-9
Dibromo-styrene grafted PP	171091-06-8
Ethylene-bis(5,6-dibromo-norbornane-2,3-dicarboximide)	52907-07-0
N,N'-Ethylene –bis-(tetrabromo-phthalimide)	32588-76-4
Octabromo diphenyl(C12H2BR8)	61288-13-9
Pentabromo-benzyl bromide	38521-51-6
Pentabromo-benzyl-acrylate, monomer	59447-55-1
Pentabromo-benzyl-acrylate, polymer	59447-57-3
Pentabromo-phenol	608-71-9
Pentabromo-toluene	87-83-2
Poly(2,6-dibromo-phenylene oxide)	69882-11-7
Poly-dibromo-styrene	31780-26-4
TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
TBPA Na salt	25357-79-3
TBPA, glycol-and propylene-oxide esters	75790-69-1
Tetrabromo phthalic anhydride(TBPA)	632-79-1
Tetrabromo-bisphenol S	39635-79-5
Tetrabromo-chyclo-octane	31454-48-5
Tetra-decabromo-diphenoxy-benzene	58965-66-5
Tribromo-bisphenyl-maleinimide	59789-51-4
Tribromo-neopentyl-alcohol	36483-57-5
Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
Tribromo-styrene	61368-34-1

[Annex 2] Examples of substances and its compounds (Class Ⅲ)

19-3) Brominated Flame Retardants and its compounds

Substance name	CAS No
Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
Tris(2,4-Dibromo-phenyl) phosphate	49690-63-3
Tris(tribromo-neopentyl) phosphate	19186-97-1
Vinyl bromide	593-60-2
Hexabromo cyclododecane(HBCDD)	25637-99-4, 3194-55-6
alpha-hexabromocyclododecane	134237-50-6
beta-hexabromocyclododecane	134237-51-7
gamma-hexabromocyclododecane	134237-52-8
Other BFRs, Brominated Flame Retardants and its compounds	-

20) Polyvinyl chloride (PVC)

Substance name	CAS No
Polyvibyl Chloride(PVC)	93050-82-9
Polyvibyl Chloride(PVC)	9002-86-2
Other PVC compounds	-

21) Phthalates

Substance name	CAS No
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7
Butyl benzyl phthalate (BBP)	85-68-7
Diisononyl phthalate (DINP)	28553-12-0, 68515-48-0
1,2-Benzenedicarboxylic acid diisodecyl ester (DIDP)	26761-40-0
Dibutylphthalate (DBP)	84-74-2
Diethyl phthalate (DEP)	84-66-2
Diisodecyl phthalate	68515-49-1
Dimethyl phthalate (DMP)	131-11-3
Di-n-octyl phthalate (DNOP)	117-84-0
Diisobutyl phthalate (DIBP)	84-69-5
Other phthalate and its compound	-

[Annex 2] Examples of substances and its compounds (Class Ⅲ)

22) Antimony and compounds

Substance name	CAS No
Antimony Trioxide	1309-64-4
Antimony trisulfide	1345-04-6
Antimony trichloride	10025-91-9
Sodium antimonate	15432-85-6
Antimony pentoxide	1314-60-9
Antimony pentachloride	7647-18-9
Antimony(111) bromide	7789-61-9
Antimony(V) sulfide	1315-04-4
Antimony tetroxide	1332-81-6
Other Antimony and its compounds	-

23) Beryllium and compounds

Substance name	CAS No
Beryllium metal	7440-41-7
Beryllium oxide	1304-56-9
Beryllium carbonate	66104-24-3
Beryllium chloride	7787-47-5
Beryllium fluoride	7787-49-7
Beryllium hydroxide	13327-32-7
Beryllium nitrate	13597-99-4
Beryllium phosphate	13598-15-7
Beryllium sulfate	13510-49-1
Beryllium sulphate tetrahydrate	7787-56-6
Other Beryllium and its compounds	-

24) Cobalt dichloride

Substance name	CAS No
Cobalt dichloride	7646-79-9

25-1) Chlorinated Flame Retardants and its compounds

Substance name	CAS No
BROMODICHLOROMETHANE	75-27-4
CHLORENDIC ANHYDRIDE	115-27-5
CHLORINATED PARAFFINS	63449-39-8
CHLOROENDRIC ACID	115-28-6
TETRACHLOROPHTHALIC ANHYDRIDE(TCPA)	117-08-8
CYCLOPROPANECARBOXYLIC ACID, 3-(2-CHLORO-3,3,3-TRIFLUORO-1-PROPENYL)-2,2-DIMETHYL-, (2-METHYL(1,1 -BIPHENYL)-3-YL)METHYL ESTER, (1.ALPHA.,3.ALPHA.(Z))-	82657-04-3
(S)-2-CHLOROPROPIONIC ACID	29617-66-1
1-(3,4-DICHLOROPHENYL)-3,3-DIMETHYLUREA	330-54-1
1H-BENZIMIDAZOLE, 2-(2-CHLOROPHENYL)-	3574-96-7
1H-ISOINDOLE-1,3(2H)-DIONE, 4,5,6,7-TETR	30125-47-4
1-PROPENE, HOMOPOLYMER, CHLORINATED	68442-33-1
2-(4-CHLOROBENZYL)-BENZIMIDAZOLE	5468-66-6
2-BUTANONE, 3-CHLORO-	4091-39-8
2-CHLORO-6-NITROANISOLE	80866-77-9
2-NAPHTHALENECARBOXAMIDE COMPOUND	5280-78-4
2-NAPHTHALENECARBOXAMIDE, 4-[(2,5-DICHLOROPHENYL)AZO]-3-HYDROXY-N-PHENYL-	6041-94-7
2-NAPHTHANILIDE, 4 -CHLORO-3-HYDROXY-2 ,5 -DIMETHOXY-4-((2-METHOXY-5-(PHENYLCARBAMOYL)PHENYL)AZO)-	5280-68-2
2-NAPHTALENECARBOXAMIDE, 3-HYDROXY-4-((2-METHOXY-5-((PHENYLAMINO)CARBONYL)PHENYL)AZO)-N-(2-METHOXY-5-CHLOROPHENYL)-	67990-05-0
1,4-BIS((1-(2,5-DICHLOROPHENYLAZO)-2-HYDROXY-3-NAPHTHOYAL)AMINO)BENZENE	3905-19-9
2-NAPHTHALENECARBOXYLIC ACID, 4-((5-CHLORO-4-METHYL-2-SULFOPHENYL)AZO)-3-HYDROXY-	7585-41-3
2-NAPHTHALENECARBOXYLIC ACID, CHLORO-AZO	7023-61-2
4,5-DICHLORO-2-N-OCTYL-3-ISOTHIAZOLONE	64359-81-5
3-(4-CHLOROPHENYL)-1,1-DIMETHYLUREA	150-68-5
2-PYRAZOLIN-5-ONE, 4,4 -(3,3 -DICHLORO-4,4 -BIPHENYLYLENEBISAZO)-	3520-72-7
4(2-CHLOROETHYL)MORPHOLINE HYDROCHLORIDE	3647-69-6
4-CHLORO-O-TOLUIDINE	95-69-2
4-CHLOROTOLUENE	106-43-4
5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE	26172-55-4
ACETIC ACID VINYL ESTER, POLYMER WITH CHLOROETHYLENE AND VINYL ALC.	25086-48-0
ANILINE HYDROCHLORIDE	142-04-1
BARIUM CHLORIDE (BACL2), DIHYDRATE	10326-27-9
BASIC PIGMENT VIOLET 23 PICCS CARBAZOLE	215247-95-3
BENZAMIDE, 2,6-DICHLORO-	2008-58-4
BENZAMIDE,-CHLORO -AZO-TRIFLUOROMETHYL	57971-97-8

25-2) Chlorinated Flame Retardants and its compounds

Substance name	CAS No
BENZENE, 1,2,4-TRICHLORO-	120-82-1
BENZENE, 1,2-DICHLORO-	95-50-1
BENZENE, 1-CHLORO-3-NITRO-	121-73-3
BENZENE, 1-CHLORO-4-ETHENYL-	1073-67-2
BENZENESULFONIC ACID, 4-CHLORO-2-((2-HYDROXY-3-(((2-	73263-37-3
C.I. 20055 CROMOPHTAL RED	68259-05-2
BUPIVACAINE HYDROCHLORIDE	14252-80-3
BUTANAMIDE, N,N -(3,3 -DIMETHYL(1,1 -BIPHENYL)-4,4 -DIYL)BIS(2-((2,4-DICHLOROPHENYL)AZO)-3-OXO-	5979-28-2
ACETOACETAMIDE, 2-((4-CHLORO-2-NITROPHENYL)AZO)-N-(2-OXO-5-BENZIMIDAZOLINYL)-	12236-62-3
2-BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL)AZO)-3-HYDROXY-N-(2-METHOXYPHENYL)-	13515-40-7
BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL)AZO)-N-(2-CHLOROPHENYL)-3-OXO-	6486-23-3
C.I. PIGMENT YELLOW 55	6358-37-8
2-BUTENAMIDE, N-(4-CHLORO-2,5-DIMETHOXYPHENYL)-2-((2,5-DIMETHOXY-4-((PHENYLAMINO)SULFONYL)PHENYL)AZO)-3-HYDROXY-	12225-18-2
BUTYL 2,4-DICHLOROPHENOXYACETATE	94-80-4
C.I. PIGMENT GREEN 7	1328-53-6
C.I. PIGMENT YELLOW 83	5567-15-7
CARBONIC DICHLORIDE	75-44-5
CARBONIC DICHLORIDE, POLYMER WITH 4,4 -(1-METHYETHYLIDENE)BIS(2,6-DIBROMOPHENOL), 2,4,6-TRIBROMOPHENOL-TERMINATED	71342-77-3
CHLORIDE	16887-00-6
CHLORINE	22537-15-1
CHLORINE	7782-50-5
CHLOROANILINE	27134-26-5
CHLORODIHYDROQUINOACRIDINEDIONE	3089-17-6
CHLORODIPHENYL	37324-23-5
CHLOROMETHYL PIVALATE (POM)	18997-19-8
CHLOROMETHYL THIAZOLONE	55965-84-9
CHLOROPENTANES, MIXTYRE OF ISOMERS	29656-63-1
CHLOROTOLURON	15545-48-9
CHROMATE(3-), BIS(5-CHLORO-3-((4,5-DIHYD	73324-05-7
CHROMATE, CHLOROPHENYL, AZO	31714-55-3
COBALT CHLORIDE (COCL2)	7646-79-9
COBALT CHLORIDE (COCL2), HEXAHYDRATE	7791-13-1
COPPER PERCHLOROPHTHALOCYANINE	14832-14-5
COPPER MONOCHLOROPHTHALOCYANINE	12239-87-1
DIARYLANILIDE YELLOW	6358-85-6

25-3) Chlorinated Flame Retardants and its compounds

Substance name	CAS No
DICHLORO-2,2-P-CYCLOPHANE	28804-46-8
DICHLORODIMETHYLSILANE REACTION PRODUCT WITH SILICA	68611-44-9
DICHLOROMETHANE	75-09-2
1,4:7,10-DIMETHANODIBENZO(A,E)CYCLOOCTENE	13560-89-9
DYE 26	76871-75-5
EPICHLOROHYDRIN	106-89-8
POLYOLEFINS SULFONIC ACIDS	68037-39-8
HYDROCHLORIC ACID	7647-01-0
ISOINDOLE-TETRACHLORO-QUINOLINYL	56731-19-2
1-(4-CHLORO-O-SULFO-5-TOLYLAZO)-2-NAPHTHOL, BARIUM SALT	5160-02-1
LITHIUM CHLORIDE (LICL)	7447-41-8
LITHIUM PERCHLORATE	7791-03-9
METHYLAMINE HYDROCHLORIDE	593-51-1
METHYLPHOSPHONIC DICHLORIDE	676-97-1
NICKEL CHLORIDE (NICL2)	7718-54-9
NICKEL CHLORIDE (NICL2), HEXAHYDRATE	7791-20-0
PARA-DICHLOROBENZENE	106-46-7
PENTACHLORO-PHENOL	87-86-5
2-(2 -HYDROXY-3 -TERT-BUTYL-5 -METHYLPHENYL)-5-CHLOROBENZOTRIAZOLE	3896-11-5
PHENOL, 2,4-DICHLORO-	120-83-2
PHOSPHONOUS DICHLORIDE, PHENYL-	644-97-3
PHOSPHOROUS TRICHLORIDE	7719-12-2
PHOSPHORUS OXYCHLORIDE	10025-87-3
PHOSPHORUS PENTACHLORIDE	10026-13-8
POLYCHLORINATED NAPHTHALENES	70776-03-3
POLYCHLOROPRENE	9010-98-4
POLYVINYL CHLORIDE (PVC)	93050-82-9
3-(4-((2,6-DICHLORO-4-NITROPHENYL)AZO)-N-(2-HYDROXYETHYL)ANILINO)PROPIONITRILE, ACETATE (ESTER)	5261-31-4
1-(4-CHLORO-O-SULFO-5-TOLYLAZO)-2-NAPHTHOL, BARIUM SALT	5160-02-1
PYRROLO(3,4-C)PYRROLE-1,4-DIONE COMPOUND	84632-65-5
CHLORINATED NATURAL RUBBER	9006-03-5
TRICHLOROVINYLSILICON	75-94-5
SODIUM CHLORIDE	7647-14-5
TETRACHLOROETHYLENE	127-18-4
TETRACHLORO-U-HYDROXY(U-METHACRYLATO-O:O)DICHROMIUM	15096-41-0
THIOSULFAN	115-29-7
TRICHLORO DI-P-XYLYLENE	29716-49-2
TRICHLOROETHYLENE	79-01-6

25-4) Chlorinated Flame Retardants and its compounds

Substance name	CAS No
TRIETHYLAMINE HYDROCHLORIDE	554-68-7
TRIS(2-CHLOROETHYL)PHOSPHATE	115-96-8
TRIS(CHLOROETHYL) PHOSPHATE	29716-44-7
VINYL CHLORIDE	75-01-4
VINYL CHLORIDE COPOLYMER	25037-78-9
VINYL CHLORIDE-VINYL ACETATE COPOLYMERS	9003-22-9
ETHANAMINIUM, N-(6-(DIETHYLAMINO)-9-(2-(METHOXYCARBONYL)PHENYL)-3H-XANTHEN-3-YLIDENE)-N-ETHYL-, CHLORIDE	39393-39-0
BENZOIC ACID, 2-(6-(ETHYLAMINO)-3-(ETHYLIMINO)-2,7-DIMETHYL-3H-XANTHEN-9-YL)-	3068-39-1
ZINC CHLORIDE	7646-85-7

Appendix-2 : Others compound and its compounds

Category Code	Substance name	CAS No
4,4-MDA	4,4'- Diaminodiphenylmethane (4,4-MDA)	101-77-9
Perchlorate Compounds	Lithium perchlorate	7791-03-9
Perchlorate Compounds	Other perchlorate compounds	-
Radioactive Substances	Uranium-238	7440-61-1
Radioactive Substances	Radon	10043-92-2
Radioactive Substances	Americium-241	14596-10-2
Radioactive Substances	Thorium-232	7440-29-1
Radioactive Substances	Cesium (Radioactive Isotopes only)	7440-46-2 (Cs-137 010045-97-3)
Radioactive Substances	Strontium (Radioactive Isotopes only)	7440-29-6 (Sr-90 10098-97-2)
Radioactive Substances	Other radioactive substances	-
TCEP	Tris (2-chloroethyl)phosphate (TCEP)	115-96-8
PFOA	Perfluorooctanoic acid	335-67-1
PFOA	Perfluorooctanoic acid ammonium salt	3825-26-1
PFOA	Perfluorooctanoic acid sodium salt	335-95-5
PFOA	Perfluorooctanoic acid potassium salt	2395-00-8
PFOA	Silver perfluorooctanoate	335-93-3
PFOA	Perfluorooctanoyl fluoride	335-66-0
PFOA	Methyl perfluorooctanoate	376-27-2
PFOA	Ethyl perfluorooctanoate	3108-24-5
PFOA	Other PFOAs	-
Bisphenol A	Bisphenol A	80-05-7

Appendix-2 : Others compound and its compounds

Category Code	Substance name	CAS No
MCCP	Medium-chain chlorinated paraffins, C14-C17	85535-85-9
Triclosan	Triclosan	3380-34-5
PCP	Pentachlorophenol	87-86-5
(DBHP)BT	2-(2H-benzotriazol-2-yl)-4,6-di-tert-butylphenol	3846-71-7
GHG	Carbon tetrafluoride (Perfluoromethane)	75-73-0
GHG	Perfluoroethane(Hexafluoroethane)	76-16-4
GHG	Perfluoropropane (Octafluoroproane)	76-19-7
GHG	Perfluorobutane(Decafluorobutane)	355-25-9
GHG	Perfluoropentane (Dodecafluoropentane)	678-26-2
GHG	Perfluorohexane(Tetradecafluorohexane)	355-42-0
GHG	Perfluorocyclobutane	115-25-3
GHG	Sulfur Hexafluoride (SF6)	2551-62-4
GHG	HFC-23CHF3	75-46-7
GHG	HFC-32CH2F2	75-10-5
GHG	HFC-41CH3F	593-35-3
GHG	HFC-43-10meeC5H2F10	138495-42-8
GHG	HFC-125C2HF5	354-33-6
GHG	HFC-134C2H2F4	359-35-3
GHG	HFC-134aCH2FCF3	811-97-2
GHG	HFC-152aC2H4F2	75-37-6
GHG	HFC-143C2H3F3	430-66-0
GHG	HFC-143aC2H3F3	420-46-2
GHG	HFC-227eaC3HF7	431-89-0
GHG	HFC-236cbCH2FCF2CF3	677-56-5
GHG	HFC-236eaCHF2CHFCF3	431-63-0
GHG	HFC-236faC3H2F6	690-39-1
GHG	HFC-245caC3H3F5	679-86-7
GHG	HFC-245faCHF2CH2CF3	460-73-1
GHG	HFC-365mfcCF3CH2CF2CH3	406-58-6
GHG	Other GHGs	-

[Annex 3] : Substances in EU SVHC candidate list

No	Substance Name	CAS Number	Product	Class	Remark
1	Lead diazide, Lead azide	13424-46-9	All Products	Class-I	Lead and its compounds
2	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	1344-37-2			
3	Lead chromate	7758-97-6			
4	Lead hydrogen arsenate	7784-40-9			
5	Acids generated from chromium trioxide and their oligomers. Names of the acids and their oligomers: Chromic acid, Dichromic acid, Oligomers of chromic acid and dichromic acid.	7738-94-5,13530-68-2			Hexavalent chromium and its compounds
6	Chromium trioxide	1333-82-0			
7	Potassium chromate	7789-00-6			
8	Sodium dichromate	7789-12-0,10588-01-9			
9	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8		Class-II	Short-chain chlorinated paraffins
10	Diarsenic trioxide	1327-53-3			Arsenic and its compounds
11	Diarsenic pentaoxide	1303-28-2			
12	Calcium arsenate	7778-44-1			
13	2,2'-dichloro-4,4'-methylenedianiline	101-14-4			Azo colorants
14	4,4'- Diaminodiphenylmethane (MDA)	101-77-9			
15	2-Methoxyaniline; o-Anisidine	90-04-0			
16	Bis(tributyltin)oxide (TBTO)	56-35-9			Organic tin compounds
17	Diisobutyl phthalate	84-69-5		Class-III	Phthalates
18	Benzyl butyl phthalate (BBP)	85-68-7			
19	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7			
20	Dibutyl phthalate (DBP)	84-74-2			

[Annex 3] : Substances in EU SVHC candidate list

No	Substance Name	CAS Number	Product	Class	Remark
21	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified: Alpha-exabromocyclododecane Beta-hexabromocyclododecane Gamma-hexabromocyclododecane	25637-99-4,3194-55-6(134237-50-6) (134237-51-7) (134237-52-8)	All Products	Class-III	BFR
22	Tris(2-chloroethyl)phosphate	115-96-8			CFR
23	Cobalt dichloride	7646-79-9			Cobalt dichloride
24	Diboron trioxide	1303-86-2		Others	Diboron trioxide
25	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9			TGIC
26	Anthracene	120-12-7			Anthracene
27	α,α-Bis[4-(dimethylamino)phenyl]-4-(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	6786-83-0		Substances in EU REACH SVHC candidate list which need to be monitored	
28	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1			
29	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6			
30	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2			
31	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	561-41-1			
32	Lead(II) bis(methanesulfonate)	17570-76-2			
33	Formamide	75-12-7			

[Annex 3] : Substances in EU SVHC candidate list

No	Substance Name	CAS Number	Product	Class	Remark
34	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	548-62-9	All Products	Substances in EU REACH SVHC candidate list which need to be monitored	
35	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4			
36	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) [with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)]	2580-56-5			
37	4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8			
38	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9			
39	N,N-dimethylacetamide	127-19-5			
40	Phenolphthalein	13424-46-9			
41	Lead dipicrate	6477-64-1			
42	1,2-dichloroethane	107-06-2			
43	Dichromium tris(chromate)	24613-89-6			
44	Pentazinc chromate octahydroxide	49663-84-5			
45	Arsenic acid	7778-39-4			
46	Potassium hydroxyoctaoxodizincatedichromate	11103-86-9			
47	Formaldehyde, oligomeric reaction products with aniline	25214-70-4			
48	Lead styphnate	15245-44-0			
49	Trilead diarsenate	3687-31-8			

[Annex 3] : Substances in EU SVHC candidate list

No	Substance Name	CAS Number	Product	Class	Remark
50	Zirconia Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm). c) alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content less or equal to 18% by weight	-	All Products	Substances in EU REACH SVHC candidate list which need to be monitored	
51	Bis(2-methoxyethyl) phthalate	117-82-8			
52	Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (μm) c) alkaline oxide and alkali earth oxide (Na2O+K2O+CaO+MgO+BaO) content less or equal to 18% by weight	-			

[Annex 3] : Substances in EU SVHC candidate list

No	Substance Name	CAS Number	Product	Class	Remark
53	Bis(2-methoxyethyl) ether	111-96-6	All Products	Substances in EU REACH SVHC candidate list which need to be monitored	
54	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6			
55	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4			
56	Strontium chromate	7775-11-3			
57	1-Methyl-2-pyrrolidone	872-50-4			
58	1,2,3-Trichloropropane	96-18-4			
59	2-Ethoxyethyl acetate	111-15-9			
60	Hydrazine	302-01-2,7803-57-8			
61	Cobalt(II) diacetate	71-48-7			
62	Cobalt(II) sulphate	10124-43-3			
63	2-Ethoxyethanol	110-80-5			
64	2-Methoxyethanol	109-86-4			
65	Cobalt(II) carbonate	513-79-1			
66	Cobalt(II) dinitrate	10141-05-6			
67	Trichloroethylene	15606-95-8			
68	Potassium dichromate	7778-50-9			
69	Tetraboron disodium heptaoxide, hydrate	12267-73-1			
70	Ammonium dichromate	7789-09-5			
71	Boric acid	10043-35-3,11113-50-1			
72	Sodium chromate	7775-11-3			
73	Disodium tetraborate, anhydrous	1303-96-4,1330-43-4,12179-04-3			
74	Acrylamide	79-06-1			
75	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	12656-85-8			
76	Anthracene oil	90640-80-5			
77	2,4-Dinitrotoluene	121-14-2			

[Annex 3] : Substances in EU SVHC candidate list

No	Substance Name	CAS Number	Product	Class	Remark
78	Anthracene oil, anthracene paste, anthracene fraction	91995-15-2	All Products	Substances in EU REACH SVHC candidate list which need to be monitored	
79	Anthracene oil, anthracene-low	90640-82-7			
80	Anthracene oil, anthracene paste	90640-81-6			
81	Pitch, coal tar, high temp.	65996-93-2			
82	Anthracene oil, anthracene paste,distn. lights	91995-17-4			
83	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2			
84	Triethyl arsenate	15606-95-8			
78	Anthracene oil, anthracene paste, anthracene fraction	91995-15-2			
79	Anthracene oil, anthracene-low	90640-82-7			
80	Anthracene oil, anthracene paste	90640-81-6			
81	Pitch, coal tar, high temp.	65996-93-2			
82	Anthracene oil, anthracene paste,distn. lights	91995-17-4			
83	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2			
84	Triethyl arsenate	15606-95-8			

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