

SAMSUNG

Samsung Electronics
Standards for Control of Substances used in products
(SEC Registration No. 0QA-2049)

Revision 21

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Samsung Electronics Co., Ltd

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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)

The purpose of this standard (0QA-2049), is to minimize the risk regarding adverse effects on human health and the environment as well as that products and parts sold by Samsung Electronics('SEC') comply with global environmental regulations.

Article 3 (Scope)

- This standard applies to all products and parts developed and to be sold by SEC regardless of region.
 - *Product : Finished product purchased by SEC to sell (outsourcing product, purchasing product)
 - *Part : Part composing product of SEC (including packaging, battery, subsidiary material)
- This standard applies to all products designed, developed and manufactured by the company regardless of region. This standard applies to all **products** and **parts** developed and to be sold by SEC regardless of region.

Articles 4 (Definitions)

1. Substances concerning Product production

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

2. Classification of Substances concerning Product production

- Class I: Substances are regulated by EU RoHS Directive 2011/65/EU (recasting 2002/95/EC).
 - These substances are restricted to be used in Electrical and Electronic Equipment (EEE).
- Class II: Substances are managed by regulation or convention other than EU RoHS Directive. These Substances are restricted to be used in products in general.
- Class III: Substances which are voluntary phase-out due to the potentially negative effects to the environment or the health
- Others: Substances which need to be monitored due to the predicted future legislative framework and restricted in use for special purposes.

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3. Exemptions

The Exemptions of Class I and II are adopted from the decisions of EU RoHS Directive and other legislation concerning product production. The Exemptions of Class III and others are adopted required to maintain specific quality, characteristic, appearance or performance of products. The Exemptions can be used until appropriate measures or substitutes are developed.

4. Homogeneous materials

A component consisting of a material, which cannot be mechanically disjointed or separated into different materials.

5. Threshold Limit

The maximum concentration level at which the presence of a substance can be tolerated in a material. The threshold limits are determined by what is practically achievable by obtaining the goal of minimizing the hazard, whilst allowing for detection sensitivity errors of instrumental measurements and impurities in a material. When parts/products are exceeding the threshold limit of restricted substances, Samsung Electronics regards these as intentional use by the supplier and therefore prohibits the use.

6. Precision Analysis

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

1) Organic Materials

a general term for organic compounds which are chemical compounds whose molecules contain carbon atoms. This includes plastics, rubber, ink etc.

2) Inorganic Materials

a general term for inorganic compounds which are chemical compounds not organic Compounds (as described above). This includes metal, alloy, ceramic etc.

* CV-AAS: Cold Vapor-Atomic Absorption Spectroscopy * DMA : Direct Mercury Analyzer

* AFS: Atomic fluorescence Spectrometry

* ICP: Inductively Coupled Plasma

* UV-VIS: Ultraviolet-Visible Spectroscopy

* GC/MS: Gas Chromatography/Mass Spectrometry

* C-IC: Combustion Ion Chromatography

* IAMS : Ion Attachment Mass Spectrometry

* HPLC : High Pressure Liquid Chromatography (Ultra Violet detection)

7. ICP Data (Precision analysis Data)

Test reports issued per International Test Standards from an ISO 17025 accredited testing laboratory.

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8. Material Composition Data

Data or document to check the composition, (CAS No., EC No.) of chemicals in an homogeneous material. (e.g. Material Safety Data Sheet (MSDS), Mill Sheet, Material Declaration, etc.)

9. Outsourced finished product

Finished products, which are produced at external manufacturing facilities; including ODM, OEM, and foundry.

10. Purchasing product

Product with SEC brand manufactured by a third party and developed by SEC or another third party; for example flip cover of cell phone, small fridge, virus doctor..

11. Volatile Organic Compounds, VOC

Organic compounds with a vapor pressure above 10.3 kPa \uparrow , such as petroleum products, solvents etc. which are dangerous to human health and/or can cause harm to the environment.

12. Screening Test

Inspection to check the presence of hazardous substances using XRF, Spot-test, VOC detectors, and etc.

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 [to the e-CIMS\(Environment Chemical Integrated System for Partners\)](#) 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.

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Chapter 2 Standard for Control of Substances concerning Product production

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 solid part of a finished product (however small) which cannot be mechanically disassembled further into single materials or articles.

2. List of Control of substances in products

Table 1. Banned and restricted substances

*Class I: Substances are regulated in principal by the EU RoHS Directive; 2011/65/EU.

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; China RoHS; Korea RoHS; Japan J-Moss; US/CA SB-20/50 California Proposition 65
	Lead and its compounds	EU RoHS, Packaging, Battery Directive; California Proposition 65; OSPAR Priority Chemicals; China RoHS; Korea RoHS; Japan J-Moss; US/CA SB-20/50 US CPSC Public Law 110-314
	Mercury and its compounds	EU RoHS, Packaging, Battery Directive; OSPAR Priority Chemicals; Korea RoHS; China RoHS; Japan J-Moss; US/CA SB-20/50; California Proposition 65
	Hexavalent chromium and its compounds	EU RoHS, Packaging Directive; OSPAR Priority Chemicals; Korea RoHS; China RoHS; Japan J-Moss; US/CA SB-20/50; California Proposition 65
	Polybrominated biphenyls (PBBs)	EU RoHS Directive; OSPAR Priority Chemicals; Korea RoHS; China RoHS; Japan J-Moss; California Proposition 65
	Polybrominated diphenylethers (PBDEs)	EU RoHS Directive; OSPAR Priority Chemicals; Korea RoHS; China RoHS; Japan J-Moss
	BBP (Benzyl butyl phthalate)	EU RoHS(2011/65/EU); REACH Regulation; California Proposition 65
	DBP (Dibutyl phthalate)	
DEHP (Bis(2-ethylhexyl) phthalate)		
DIBP (Diisobutyl phthalate)		

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Table 2. Banned and restricted substances

*Class II: Substances are managed by regulation or convention other than EU RoHS Directive (table 1).

These substances are restricted to be used in products.

Class	Substance / Material	Regulation
II	Polychlorinated biphenyls (PCBs) Polychlorinated terphenyls (PCTs) Polychlorinated naphthalenes (PCNs, with three or more chlorine substituents)	Stockholm Convention ANNEX XVII of REACH Regulation (EC) No 1907/2006; Japan Law concerning the evaluation of chemical substances
	Ozone layer depleting substances /Greenhouse Gas(CFCs, HCFCs, Halons, HFCs, PFCs, SF6)	Montreal Protocol EC 1005/2009 (EC 2037/2000) US Clean Air Act, No 517/2014 EU
	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
	PFOs(Perfluorooctane Sulfonates)	Stockholm convention COMMISSION REGULATION (EU) No 757/2010 Commission Regulation (EC) No 552/2009;
	DMF(Dimethylfumarate)	COMMISSION DECISION 2009/251/EC
	PCP(Pentachlorophenol)	Norway Product Regulation Annex XVII of REACH Regulation (EC) No 1907/2006
	PFOA (Pentadecafluorooctanoic acid)	Norway Product Regulation Annex XVII of REACH Regulation (EC) No 1907/2006
	PAH Polycyclic Aromatic Hydro carbons	Annex XVII of REACH regulation (EC) No 1907/2006
	Bisphenol A	France ACT N.2012-1442 of 24 Dec.2012 to suspend manufacture, import, export and placing on the market of any packaging for food containing Bisphenol A
	HBCD(Hexabromocyclododecane)	Norway: Product Regulation No. 922 of 2004 - Amendment ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Nonylphenol, Nonylphenol Ethoxylate	Turkey: Hazardous Chemical Content of some Consumer Products
	Phthalates other than listed in Class I ^{*)}	ANNEX XVII of REACH Regulation (EC) No 1907/2006 CA Proposition 65 US CPSC Public Law 110-314
	TCEP, TDCPP	D.C. Law 21-108. Carcinogenic Flame Retardant Prohibition Amendment Act of 2016
	PHMG, PGH, PHMB, CMIT, MIT	Korea Consumer Chemical Products and Biocides Safety Act

*) Class II phthalates are listed in number 28 from "Annex-3"

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Table 3. Voluntary phase-out of substances

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

Class	Substance / Material	Application	Start of Phase-out	Phase-out Date
III	TBBP-A	All products	-	Jan, 2008
	Brominated Flame Retardants	Printed wiring boards in mobile phones	-	Jul, 2007
		Mobile products**	Jan, 2009	Jan, 2010
		Notebooks	Jan, 2011	Jan, 2012
		AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019
	PVC	Mobile products**	Jul, 2009	Apr, 2010
		Notebooks (except power cord and adapter)	Jan, 2011	Jan, 2012
		TVs: Internal wires (except LCD/LED panel and PDP module)	Sep, 2009	Jan, 2011
		Monitors: internal wires (except panel)	Jan, 2011	Jan, 2012
		AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019
	Phthalates	Mobile products**	Jan, 2010	Jan, 2011
		Notebooks (except power cord and adapter)	Jan, 2012	Jan, 2013
		TVs: internal wires (except LCD/LED panel and PDP module)	Jan, 2012	Jan, 2013
		Monitors: internal wires (except panel)	Jan, 2012	Jan, 2013
		AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019
	Antimony Compounds	Mobile products**	Jan, 2012	Jan, 2013
		Notebooks (except power cord and adapter)	Jan, 2012	Jan, 2013
		TVs: internal wires (except LCD/LED panel and PDP module)	Jan, 2012	Jan, 2013
		Monitors: internal wires (except panel)	Jan, 2012	Jan, 2013
		AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019
	Beryllium and its compounds	Mobile products**	Jan, 2010	Jan, 2011
		All products	Jan, 2012	Jan, 2013
		AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019
Cobalt dichloride	All product	-	Jun.2011	
Chlorinated Flame Retardants	Mobile products**	Jan, 2011	Jan, 2012	
	AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019	
VOCs	Mobile phones, PC (including accessories and chargers)	Oct.2014	Jan.2015	
	AI&IoT products(except PVC safety specification required market)	Jan, 2018	Jan, 2019	

* Notebooks launched in North America from 2018 phase out Class III substances without exception

** Mobiles phones, tablets, wearables including accessories.

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.

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Table 4. Others

Class	Substance / Material	Application Product	Remarks
Monitoring	Radioactive Substances	All products	Substances need to be monitored such as EU REACH SVHC candidate list or substances which are expected to regulate in the future
	MCCP(Medium Chain Chlorinated Paraffins)		
	Indium Phosphide		
	Cobalt dichloride and Cobalt sulphate		
	Triclosan		
	PFRs(Triphenyl phosphate)		
	Substances in SVHC candidate list ¹⁾		
	Substances restricted under REACH ²⁾		
	Substances in Authorisation List under REACH ³⁾		
	POPs ⁴⁾		
	Br-Cl-P Compounds	Plastic, PCB	Swedish Chemical Tax
Special Purpose	Substances used in Wearables	Wearables	Refer to Article 12
	Substances used in Biocidal Products	Biocidal Products	Refer to Article 13
	Substances in consumer chemical products under safety check	Korea's Ministry of Environment Standards	
	Substances used in Automotive Electronics	Automotive Electronics	Refer to Article 14

1) Substances in EU REACH SVHC Candidate list are updated twice a year, refer to the latest list in ECHA site (<http://echa.europa.eu/web/guest/candidate-list-table>)

※ REACH SVHC Candidate list (SVHC : Substances of Very High Concern)

In EU REACH regulation, substances are published regularly as they are considered having high risk of CMRs, PBT, vPvB, and notification is required if the article contains more than 0.1 % by weight

* CMRs : Carcinogenic, Mutagenic, Reproductive toxicity

* PBT : Persistent, Bioaccumulative, Toxicity

* vPvB : very Persistent very Bioaccumulative

2) Substances restricted under EU REACH are refer to the latest list in ECHA site below. (<https://echa.europa.eu/substances-restricted-under-reach>)

3) Substances in Authorisation List under EU REACH are refer to the latest list in ECHA site below. (<https://echa.europa.eu/authorisation-list>)

4) POPs are refer to the latest list below. (<http://chm.pops.int/TheConvention/ThePOPs/AllPOPs/tabid/2509/Default.aspx>)

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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 2 and 3

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, pigment of resin, fluorescence material, solder, electric contact		
Application	Organic materials	Inorganic materials	
Threshold Limit	5ppm	80ppm	
Implementation date	January 2005		
Test Equipment	ICP, AAS, AFS		
Test Method	IEC 62321-5:2013, EPA-3051, EPA-3052 and etc.		

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	Accessible parts of children's product(12 years or younger) ¹⁾	
			Paint, coating	Others
Threshold Limit	100ppm	800ppm	90ppm	100ppm
Implementation date	January 2005		September 2015	
Test Equipment	ICP, AAS, AFS			
Test Method	IEC 62321-5:2013, EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004 and etc.	ASTM F963-17, EN 71-Part3		
		CPSC-CH-E1003-09.1	CPSC-CH-E1001-08.1 CPSC-CH-E1002-08.1	

1) RoHS exemptions do not apply. Please determine in advance whether the part is intended for consumer products designed or intended by the manufacturer for use by children 12 years or younger

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	800ppm	800ppm	
Implementation date	January 2005		
Test Equipment	ICP, CV-AAS, AFS, DMA		
Test Method	IEC 62321-4:2013, EPA 3050B, EPA-3052 and etc.		

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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 adhesionenhancement, anti-corrosion		
Application	Organic materials	Inorganic materials	Genuine leathers having contact with skin
Threshold Limit	800ppm	800ppm	3ppm
Implementation date	February 2005		May 2015
Test Equipment	IC, UV/VIS		
Test Method	Metal coating : IEC 62321-7-1:2015 Polymer : IEC 62321-7-2:111/408/CDV, EPA-3050B, EPA-3052, IEC6231-5 etc.		ISO 17075

Notes: A judgment of potential Hexavalent chromium content is based on the Spot-Test which is conducted by Samsung Electronics.

5) Polybrominated biphenyls (PBBs)

Example of use	flame retardant		
Application	Organic materials		
Threshold Limit	900ppm		
Implementation date	February 2005		
Test Equipment	GC/MS, HPLC/UV, IAMS		
Test Method	IEC 62321-6:2015, EPA-3540C, EPA-3545, EPA-3550B and etc.		

6) Polybrominated diphenylethers (PBDEs)

Example of use	flame retardant		
Application	Organic materials		
Threshold Limit	900ppm		
Implementation date	February 2005		
Test Equipment	GC/MS, HPLC/UV, IAMS		
Test Method	IEC 62321-6:2015, EPA-3540C, EPA-3545, EPA-3550B and etc.		

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

7) Benzyl butyl phthalate (BBP)

Example of use	plasticizer, coating adhesive, artificial leather		
Application	Organic		
Threshold Limit	900ppm		
Implementation date	General		Medical equipment
	New part	All	All
	July. 2016	July. 2018	July. 2020
Test Equipment	GC/MS, LC/MS, IAMS, Py-GC/MS		
Test Method	IEC 62321-8(111/416/CDV), EN14372:2004 etc.		

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8) Dibutyl phthalate (DBP)

Example of use	plasticizer, resistance chip, paste, coating adhesive, cleaner, artificial leather		
Application	Organic		
Threshold Limit	900ppm		
Implementation date	General		Medical equipment
	New part	All	All
	July. 2016	July. 2018	July. 2020
Test Equipment	GC/MS, LC/MS, IAMS, Py-GC/MS		
Test Method	IEC 62321-8(111/416/CDV), EN14372:2004 etc.		

9) Bis(2-ethylhexyl) phthalate (DEHP)

Example of use	plasticizer		
Application	Organic		
Threshold Limit	900ppm		
Implementation date	General		Medical equipment
	New part	All	All
	July. 2016	July. 2018	July. 2020
Test Equipment	GC/MS, LC/MS, IAMS, Py-GC/MS		
Test Method	IEC 62321-8(111/416/CDV), EN14372:2004 etc.		

10) Diisobutyl phthalate (DIBP)

Example of use	Plasticizer, Coating Adhesive, Artificial leather		
Application	Organic		
Threshold Limit	900ppm		
Implementation date	General		Medical equipment
	New part	All	All
	July. 2016	July. 2018	July. 2020
Test Equipment	GC/MS, LC/MS, IAMS, Py-GC/MS		
Test Method	IEC 62321-8(111/416/CDV), EN14372:2004 etc.		

4. Standard for Control of Class2 Substances

Note: ppm = mg/kg by weight

Exemptions of control of substances and Examples of substances and its compounds: Annex 2 and 3

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11) Polychlorinated biphenyls (PCBs) / Polychlorinated Terphenyls (PCTs)

/Polychlorinated naphthalene's (PCNs): with 3 or more chlorine substituent's

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

12) Ozone depleting substances & Greenhouse Gas: CFCs, HCFCs, Halons, HFCs, PFCs, SF6

Example of use	CFCs, HCFCs, Halons	HFCs (GWP>150)	HFCs, PFCs, SF6
Application	Refrigerant, foam blowing agent, extinguishant, solvent cleaner	Refrigerant in refrigerator for Europe	Refrigerant in refrigerator, foam blowing agent for Austria, Swiss, Denmark
Threshold Limit	No intentional use	No intentional use	No intentional use
Implementation date	May 14, 2004	1 st Jan, 2015	1 st Jan, 2002
Test Equipment	GC/ECD		
Test Method	EPA-8021B, EPA-524.1, EPA-524.2		

13) 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 Diffract meter, Thermal analysis
Test Method	EPA-0435, JIA-A 1481, NIOSH NMAM #7400, OSHA ID-160, HSE MDHS 39/4

14) Formaldehydes

Example of use	adhesive, antiseptic solution, preservative	
Application	Wooden products	Fiber
Threshold Limit	0.1ppm (in a test chamber)	0.1ppm (in a test chamber)
Implementation date	May 14, 2004	April 1, 2011
Test Equipment	HPLC, Spectrometer, Photoelectric colorimeter	
Test Method	ASTM D6007-2, E1333-96, EPA TO-11A, ISO 16000-3, KS M ISO 16000-3, KS M 1998-1~4	

Notes : Products for the U.S. Market are considered in compliance with this standard provided they meet The formaldehyde threshold limit set under 'TSCA' (Exclusion : composite woods for packaging such as pallets)

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15) 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	1,000ppm	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		

16) 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	30ppm		
Implementation date	May 14, 2004		
Test Equipment	GC/MS, GC/MSD, HPLC		
Test Method	EN 14362-1~2, CEN ISO/TS 17234		

17) 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, external antenna, external case, straps, earphones, headphones, shoulder straps, buttons, keys, rings, and etc.		
Application	Resurfacing and External metal components intended to come into direct and prolonged contact with the skin.		
Threshold Limit	0.5µg-Ni/cm ² per week		
Implementation date	May 14, 2004		
Test Equipment	ICP/OES		
Test Method	EN 1811:2011+AC:2015(3samples)		

Notes1 : EU REACH restriction limit : 0.5 µg-Ni/cm² per week

Acceptable result is below 0.88µg-Ni/cm² per week according to EN 1811:2011+A1:2015

Notes2 : Nickel management is carried out based on analysis report. (Refer to e-CIMS or Approval sheet)

18) Organic tin compounds of TBT/TPT/DBT/DOT

Example of use	stabilizer, antioxidant, antimicrobial, anti-fouling composition, preservative, bactericide, paint, pigment, inks, anticorrosive agent, Corrosion inhibitor and etc.		
Application	All parts		
Threshold Limit	1,000ppm		
Implementation date	January 1, 2012		
Test Equipment	GC/MS, GC-FPD		
Test Method	EPA 0280, DIN 38407		

Notes : Dioctyltin (DOT) : A REACH Annex XVII substance, scope is limited to fiber parts coming into contact with skin(bags, pouches, covers and etc.), and child protection products.

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19) Arsenic compounds and its compounds (As)

Example of use	pigment, paint, dye, GaAs semiconductor, flame retardants, tinted glass, metal to metal adhesive, bactericide, wood preservative
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.

20) Perfluorooctane Sulfonates (PFOSs)

Example of use	cleaner, Insulating oil, pigment, flux, adhesive, fluorinated mold spatt, PTFE
Application	All parts
Threshold Limit	1,000ppm (1 $\mu\text{g}/\text{m}^2$ for textiles and coated materials)
Implementation date	May 1, 2008
Test Equipment	LC/MS
Test Method	Acid / Metal Salt / Amide : US EPA 3540C

Note: PFOS Chemical formula: $\text{C}_8\text{F}_{17}\text{SO}_2\text{X}$ [X = OH, Metal salt (O-M+)], Halogenated substances, including polymers and amide derivatives

21) DMF(Dimethylfumarate)

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

22) PCP (Pentachlorophenol)

Example of use	Preserving agent, preservatives etc.
Application	Textile and leather
Threshold Limit	5ppm
Implementation date	September 30, 2013
Test Equipment	GC/MS
Test Method	DIN 53313, US EPA 8270

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23) PFOA (Perfluorooctanoic Acid)

Example of use	Coating materials, preservatives etc.		
Application	All parts		
Threshold Limit	10ppm (Textile and coatings for 1 µg/m ²)	0.025ppm(25ppb)	
Implementation date	September 30, 2013	July 2020	
Test Equipment	LC/MS		
Test Method	US EPA 3520, 3540, 3550		

Exception) implantable medical devices

24) PAH(Polycyclic aromatic hydrocarbons) Skin contact applications only

Example of use	Rubbers, Headphones, 3D Glasses		
Application	Parts coming into contact with skin in Consumer products		
Threshold Limit	1ppm (products intended for children 0.5ppm)		
Implementation date	27th December 2015		
Test Equipment	GC/MS		
Test Method	IEC 62321-10:ED1(111/424/CD), US EPA 3630C, 8100, 8310		

25) Bisphenol A

Example of use	Polycarbonate(PC), Epoxy resin, paint and etc.		
Application	Components of plastic made from Bisphenol A as monomer, coming into contact with food, children's product*		
Threshold Limit	No intentional use		
Implementation date	1 st January 2015		
Test Equipment	GC/MS, HPLC, LC		
Test Method	EN71-10, US EPA 3540C, ASTM D 7574-09 Korea Standards and Specifications for Food Utensils, Containers and Packages		

* Accessible parts of children's product (12 years or younger)

26) HBCD (Hexabromocyclododecane)

Example of use	Flame retardant etc.		
Application	Components for Korean · European market	Components for others	
Threshold Limit	No intentional use		No intentional use
Implementation date	1 st July 2015	1 st October 2015	
Test Equipment	GC/MS, LC/MS		
Test Method	IEC 62321-9:ED1(111/409/CD), EPA 3540C, EPA 3545, EPA 3550B etc.		

27) Nonylphenol, Nonylphenol Ethoxylate

Example of use	Cleaner, surfactants		
Application	Leather, fiber, paper	* medical equipment is excluded	
Threshold Limit	1,000 ppm		
Implementation date	14 th January 2015		
Test Equipment	HPLC, LC/MS		
Test Method	ASTM D7485, ASTM D7065 etc.		

Notes : this don't apply to non-consumer products.

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28) Phthalates other than Class I

Example of use	Plasticizer etc.		
Application	Accessible parts of children’s product (12 years or younger)	All Parts	
Threshold Limit	900 ppm each	900 ppm each	
Implementation date	1 st September 2015	1 st July 2019	
Test Equipment	GC/MS		
Test Method	CPSC-CH-C1001-09.3, ASTM F963-17, EN 71-Part3	IEC 62321-8	

* Consumer products designed or intended by the manufacturer for use by children 12 years or younger

※ Class II phthalates are listed in number 28 from "Annex-3"

29) TCEP(Tri(2-chloroethyl)phosphate), TDCPP (Tris (1,3-dichloro-2-propyl) phosphate)

Example of use	Flame retardant etc.		
Application	Organic		
Threshold Limit	1000 ppm		
Implementation date	1 st January 2019		
Test Equipment	GC/MS, HPLC/UV		
Test Method	IEC 62321-6:2015, EPA 3540C, EPA 3545, EPA 3550B etc.		

30) PHMG(Polyhexamethyleneguanidine hydrochloride), PGH(Oilgo(2-)ethoxy ethoxyethyl guanidine chloride), PHMB(Polyhexamethyleneguanidine hydrochloride)

Example of use	Disinfectant, anticorrosive agent etc.		
Application	Air filters(A/C and airpurifier for home), Cleaing products, Air freshner products		
Threshold Limit	No intentional use		
Implementation date	1 st October 2019		
Test Equipment	MALDI-TOF MS		
Test Method	Korea's Ministry of Environment standards No. 2018-71		

31) CMIT(Chloromethylisothiazolione), MIT(Methylisothiazolinon)

Example of use	Disinfectant, anticorrosive agent etc.		
Application	Air filters(A/C and airpurifier for home), Cleaing products, Air freshner products		
Threshold Limit	No intentional use		
Implementation date	1st October 2019		
Test Equipment	HPLC/UV, HPLC/MS, GC/MS		
Test Method	Korea's Ministry of Environment standards No. 2018-71		

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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 2 and 3

No	Substance	Application	Threshold Limit	Test Equipment	Test Method	Example of use
32	Tetrabromo bisphenol-A (TBBP-A)	Organic materials	900 ppm	GC/MS LC/MS	EPA-3540C, EPA-3545 EPA-3550B	flame retardant
33	Brominated flame retardants (BFRs)	Organic materials	No intentional use (Br 900ppm)	IC	EN 50267-2-2, EN 14582:2007, ASTM D7359	flame retardant
34	Polyvinyl chloride (PVC)	Organic materials	No intentional use (Cl 900ppm)	FT-IR	KS 0210	wire jacket
35	Phthalates ^{*)}	Organic (PVC, Rubber, Adhesive, Paint)	900 ppm	GC/MS HPLC-UV, IAMS, Py- GC/MS	IEC 62321-8:2017, ASTM D3421-75, EN 14372:2004, US EPA 3540C, US CPSCCH- C1001-09.1,EPA 0506, KSM 1991	Plasticizer, Resistance chip, Paste, Coating adhesive, Artificial leather
36	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
37	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
38	Cobalt dichloride	All parts	No intentional use (Co 1,000ppm)	ICP	EPA-3052, BS 3482- 9:1991[desiccants]	silica gel, humidity Indicat or
39	Chloride Flame Retardants	Organic materials	No intentional use (Cl 900ppm)	IC	EN 50267-2-2, EN 14582:2007, ASTM D7359	flame retardant
40	Volatile Organic Compounds	Applied product, Purchasing Product, Package	Toluene: 16ppm Benzene: 0.8ppm Formaldehyde: 0.08ppm	GC/MS, SIFT/MS, HPLC, Detection tube	SEC Mobile guidance	adhesive, paintadditive
		Cable, Cord	Phosphine : 0.08ppm			phosphorus flame retardant (red phosphorus)
		Semicon SDC	Benzene: No intentional use			SEC Standard ^{**)}

Note: Phase-out date of each substance in applications/products follows the Phase-out date of Table 2 in Article 9.
SDC : Samsung Display Co., Ltd.

* Class III Phthalates are listed in number 36 from "Annex-3" other than Class I and II.

** Primary verification: During parts approval process, confirm the absence of benzene with MSDS, Self-CheckSheets

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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 of products. This packaging standard covers the final materials which are delivered to the consumer.

2. Standard for Control of Substances in Packaging Materials

Note: Regulation : European Parliament and Council Directive 94/62/EC

ppm = mg/kg by packaging weight

***Article 9 shall always apply to packaging materials, representing Samsungs own internal standard. In several cases this standard goes above and beyond current legislation. Details of specific substances and any permitted exemptions are presented in Annex 2 & 3.**

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)
Implementation date	14th May 2004
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
Implementation date	14th May 2004
Test Equipment	GC/ECD
Test Method	EPA-8021B, EPA-524.1, EPA-524.2

3) Polyvinyl chloride (PVC)

Example of use	flame retardant
Application	Plastic bag, pallet
Threshold Limit	No intentional use
Implementation date	14th May 2004
Test Equipment	FT-IR
Test Method	KS 0210

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4) Brominated flame retardants (BFRs)

Example of use	flame retardant
Application	All packaging materials
Threshold Limit	Br : 900ppm
Implementation date	February 2005
Test Equipment	IC
Test Method	EN 50267-2-2, EN 14582:2007, ASTM D7359

5) Cobalt dichloride (CoCl₂)

Example of use	silica gel, humidity Indicator
Application	Desiccant (Silica gel), Humidity Indicator
Threshold Limit	No intentional use (Co 1,000ppm)
Implementation date	June 2011
Test Equipment	ICP
Test Method	EPA-3052

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Article 8 (Standard for Control of Substances in Batteries)

1. Definition of batteries

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

2. Standard for Control of Substances in Batteries

Note: Regulation : EU Battery Directive 2006/66/EC

ppm = mg/kg by weight in battery

Article 9 shall always apply to packaging materials, representing Samsungs own internal standard.

In several cases this standard goes above and beyond current legislation. Details of specific substances and any permitted exemptions are presented in Annex 2 & 3

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
Implementation date	14th May 2004
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
Implementation date	14th May 2004
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)
Implementation date	14th May 2004
Test Equipment	ICP, CV-AAS, AFS, DMA
Test Method	IEC62321(Ed.2008), EPA-3051, EPA-3052

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Article 9 (Standard for Control of Substances in Wearable Products)

1. Definition of wearable products

Products intended to be in direct contact with skin for prolonged periods (e.g. watch, head-set, goggle etc.)

2. Standard for Control of Substances in wearable products

* Article 9 applies to Wearable Products. Please refer to Annex-3 for relevant substances

1) Application : Product with fiber or leather part which is in direct contact with skin

2) Implementation date : 1st September 2015

3) Substance and limit : Test method "STANDARD 100 by OEKO-TEX®" (ppm = mg/kg by weight)

	Name	Fiber	Leather
Acidity	pH Value(unit : pH)	4.0~7.5	3.5~7.5
Japan Law 112	Formaldehyde	75	75
Chlorination phenol	Pentachlorophenol	0.5	0.5
	Sum of Tetrachlorophenols	0.5	0.5
	Sum of Trichlorophenols	2	2
	Sum of DCP (Dichlorophenol)	3	3
	Sum of MCP (Monochlorophenol)	3	2
Heavy metal Migration	Arsenic	1	-
	Lead	3	1
	Cadmium	0.1	0.1
	Mercury	0.02	0.02
	Copper	50	50
	Chromium	2.0	200
	Cobalt, Nickel	4	4
	Antimony	30	30
	Hexavalent chromium	0.5	3
Fluorochemicals ¹⁾	Sum of PFOS(ug/m2)	1	1
	PFOA(ug/m2)	1	1
Pesticides ²⁾	Sum of Pesticides	1	1
Organic Tin	TBT,TPT, DBT,DOT, Each	1(2)	1(2)
	Sum of DMT, DPhT, DPT, MBT, MOT, MMT, MPhT, TeET, TCyHT, TMT, TOT ,TPT	2	2
PAHs	Sum of 24 PAHs	10(1)	10(1)
Plasticizer	Sum of Phthalate	1000	1000
Dyes	arylamine	20	20
	Allergenic dyestuffs, carcinogenic dyestuffs	50	50
Other	DMFa (Dimethylformamide)	1000	1000
	DMFu (Dimethylfumarate)	0.1	0.1
	Short-chain chlorinated paraffins (SCCP)	1000	1000
	TCEP (Tris(2-chloroethyl)phosphate)	1000	1000
chloride compounds	Sum of Chlorinated benzene, chlorinated toluene	1	1
surfactant, wetting agent	Sum of alkylphenol(OP·NP)	10	10
	Sum of alkylphenol ethoxylates (OP,NP,OPEO,NPEO)	100	100
Preservative	OPP (o-Phenylphenol)	100	750
	CMC/CMK (4-Chlro-3-methylphenol)	-	300
	TCMTB (2-(Thiocyanomethylthio)benzothiazol)	-	500
	OIT (2-octylisothiazol-3(2H)-on)	-	100

1) All parts applied to coating or waterproof

2) synthetic fibers are not in scope

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Article 10(Standard for Control of Substances in Biocidal Products)

1. Definition of Biocide

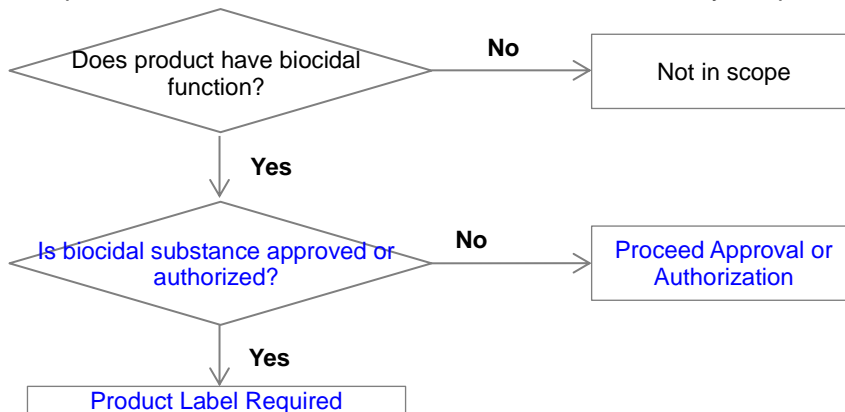
- * Biocidal substance : A chemical Substance or microorganism intended to destroy, render harmless or exert a controlling effect on any harmful organism by chemical or biological means. (PHMG,PGH,CMIT/MIT,OIT and etc.)
- * Biocidal product : Mixtures and **preparations of chemical** products making use of a biocidal substance and having the principal function of destroying, rendering harmless or exerting a controlling effect on harmful organisms. (Disinfectant, pesticide, preservative, etc.)
- * Treated articles : Products (typically articles) which have been treated with, or intentionally incorporating one or more biocidal products (Antibacterial **air filter**, **antibacterial brush**, etc)
- * Harmful organism : organism, including pathogenic agents, which has an unwanted presence or a detrimental effect on humans, their activities or the products they use or produce, on animals or the environment

2. Standard for Control of Substances in Biocidal Products

- Scope: All biocides used for the protection of products and marketed as such
 - Product protection: Protect product from e.g. mold or to maintain exterior quality(Gasket, **antibacterial air filter**, etc.)
 - Marketing : The product is marketed as having biocidal claims. (SPI function, MWO-Oven silver ceramic coating and etc.)
- Effective date : October 1, 2016
- Check EU ECHA, US EPA, **Korea MoE** approval or authorization before biocide application
 - EU ECHA : <https://echa.europa.eu/information-on-chemicals/biocidal-active-substances>
 - US EPA : <https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1>
 - Korea : <http://me.go.kr/home/web/index.do?menuId=71> (refer to Korea MoE's standards)

<Process to check the scope of in Biocidal Product Regulation>

The specific substance used in each of the categories, biocidal substance, biocidal product or treated article, should be covered by an authorization or be in the scope of future review by the European Commission or US EPA or **Korea MoE** before they are placed on the market.



3. Standard for substances used in consumer chemical products under safety check

- Application : Accessories and consumables sold with the main product or individually packaged / sold (To Korean market ONLY)
- Implementation date : 1st October, 2019
- Method : Test report for complying with regulated substances, labelling on the accessories and consumables
- Regulated scope and substances : Regulated products(35 product categories, e.g cleaning product, air freshner, air filters) and substances are published by Korea's Ministry of Environment.

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Article 11(Standard for Control of Substances in Automotive Electronics)

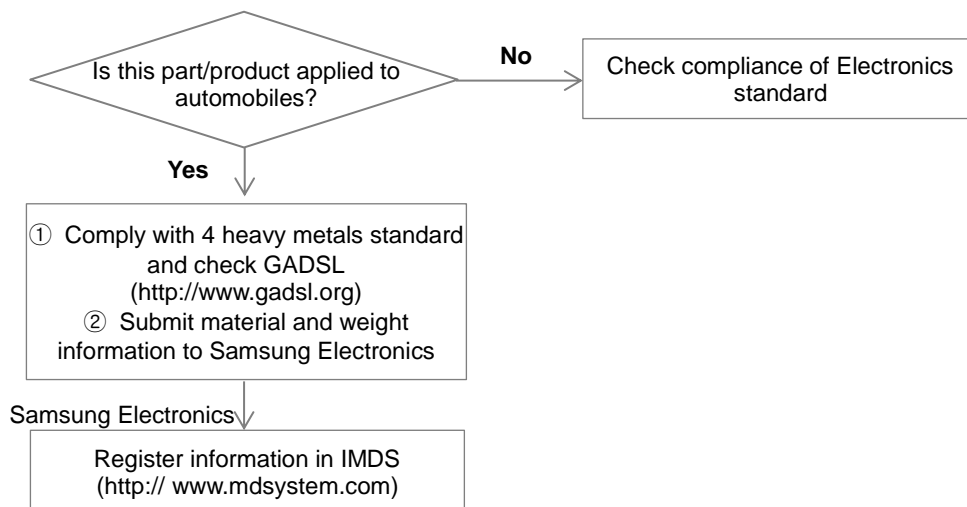
1. Definition of Automotive Electronics

- All parts of electrical and electronic circuits in automobiles

2. Standard for Control of Substances in Automotive Electronics

- Scope : Parts and materials used in automobiles;
 - All parts and materials used cars intended for less than 9 passenger cars, in addition to RVs and trucks under 3.5ton
 - ※ For automotive Electronics installed at the discretion of the consumer post sale are applied to article 9(Standard for control of substances in products)..
- Effective date : September 1, 2017
- Heavy metal restriction and declaration of substances according to Global Automotive Declarable Substance List(GADSL)
 - 4 heavy metals limit : Cd(100ppm↓), Pb, Hg, Cr6+(1,000ppm↓)
 - Substance Declaration: Global Automotive Declarable Substance List URL:www.gadsl.org
- Method : Register substances in IMDS upon customer request
 - Suppliers need to provide information of substances used from GADSL along with materials and their weight to applicable GBMs with which they have business
 - GBMs who receive the information need to register in IMDS
 - If providing information according to IMDS is not possible, discuss the method and the level of information disclosure.
 - IMDS : International Material Data System([URL:www.mdssystem.com](http://www.mdssystem.com))

<Process for checking supplier's Automotive Electronics >



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Annex 1 : Eco-partner certification for suppliers

1. Purpose

All suppliers which enter into a business relationship with SEC have to oblige the requirements in this standard with respect to the removal of hazardous substances in products, parts and raw materials. Furthermore they have to set up their own environmental management systems to ensure compliance with environmental regulations.

Eco-partners are suppliers which are acknowledged by Samsung because they adhere strictly to environmental regulations, such as RoHS, in addition to Samsung’s standard in accordance with their own internal processes. Only Eco-Partner certified suppliers are eligible to enter a business relationship with Samsung.

2. Scope

All suppliers which provide/develop parts and products intended for sale by or on behalf of SEC.

* Exception: suppliers for mold, facility, foundry and consumables.

3. Criteria for certification

Compliance with Standards for control of substances used in products (0QA-2049) and the supplier’s environmental management systems, will be assessed.

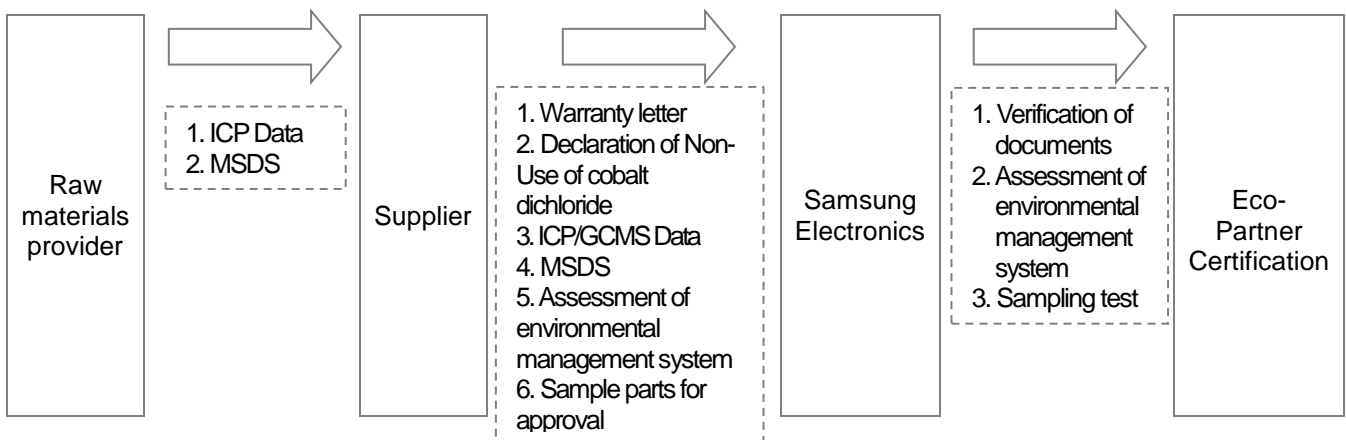
1) Criteria

Pass/Fail	Item		Valid period
	Compliance with 0QA-2049	Environmental management system	
Pass	Compliance	Higher than 80 points	2 years
Fail	Compliance	Lower than 80 points <	Prohibited to enter into business
	Non-compliance	-	

* Penalty: 1st fail→ re-assessment in one month, 2nd fail→ trade suspension for 6 months, 3rd fail→ permanent trade suspension
Site visit to the manufacturing facility is mandatory, even when the supplier does not have its own mfg. site

** Valid period may differ by product(part) type.

2) Process for certification



* Warranty letter is a letter which confirms the information submitted to SEC is accurate.

Effective period is 1 year and shall be automatically renewed for each additional year unless SEC or the Company objects in writing at least a month prior to the expiration date.

** Valid period of ICP Data is 2 years and precision analysis has to be tested on homogeneous material with the result provided including English.

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Annex 2 : Exemptions list

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1) Class I

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

	Exemption	Applicable to categories ¹⁾	End
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):		
1(a)	For general lighting purposes < 30 W: 5mg	-	2011.12.31
	For general lighting purposes < 30 W: 3,5mg	-	2012.12.31
	For general lighting purposes < 30 W: 2.5mg	-	-
1(b)	For general lighting purposes ≥ 30 W and < 50 W: 5mg	-	2011.12.31
	For general lighting purposes ≥ 30 W and < 50 W: 3,5mg	-	-
1(c)	For general lighting purposes ≥ 50 W and < 150 W: 5mg	-	-
1(d)	For general lighting purposes ≥ 150 W: 15mg	-	-
1(e)	For general lighting purposes with circular or square structural shape and tube diameters ≤ 17 mm: No limitation of use	-	2011.12.31
	For general lighting purposes with circular or square structural shape and tube diameters ≤ 17 mm : 7mg	-	-
1(f)	For special purposes: 5mg	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 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): 5mg	-	2011.12.31
	Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 4mg	-	-
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 5mg	-	2011.12.31
	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3mg	-	-

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1) Class I

	Exemption	Applicable to categories ¹⁾	End
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 5mg	-	2011.12.31
	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 3.5mg	-	-
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5mg	-	2012.12.31
	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 3.5mg	-	-
2(a)(5)	Tri-band phosphor with long lifetime (≥ 25 000 h): 8mg	-	2011.12.31
	Tri-band phosphor with long lifetime (≥ 25 000 h): 5mg	-	-
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): 10mg	-	2012.4.13
2(b)(2)	Non-linear halophosphate lamps (all diameters): 15mg	1 to 7 and 10, 8, 9 other than in vitro and industrial	2016.4.13
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter ≥ 17mm (e.g. T9) : 15mg or less	Non-linear tri-band phosphor lamps with tube diameter ≥ 17mm (e.g. T9) : No limitation of use	2011.12.31
		1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps) : 15mg	Lamps for other general lighting and special purposes (e.g. induction lamps) : No limitation of use	2011.12.31
		1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
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) : 3.5mg or less	Short length (≤ 500 mm) : No limitation of use	2011.12.31
		1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21

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1) Class I

	Exemption	Applicable to categories ¹⁾	End
3(b)	Medium length (> 500 mm and ≤ 1500 mm) : No limitation of use	-	2011.12.31
3(b)	Medium length (> 500 mm and ≤ 1500 mm) : 5mg or less	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
3(c)	Long length (> 1500 mm) : No limitation of use	-	2011.12.31
	Long length (> 1500 mm) : 13mg or less	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
4(a)	low pressure discharge lamps : No limitation of use	-	2011.12.31
	low pressure discharge lamps : 15mg or less	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
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	-	2011.12.31
	P ≤ 155 W : 30mg	-	-
4(b)- II	155 W < P ≤ 405 W : No limitation of use	-	2011.12.31
	155 W < P ≤ 405 W : 40mg	-	-
4(b)- III	P > 405 W : No limitation of use	-	2011.12.31
	P > 405 W : 40mg	-	-
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	-	2011.12.31
	P ≤ 155 W : 25mg	-	-
4(c)- II	155 W < P ≤ 405 W : No limitation of use	-	2011.12.31
	155 W < P ≤ 405 W : 30mg	-	-
4(c)- III	P > 405 W : No limitation of use	-	2011.12.31
	P > 405 W : 40mg	-	-

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1) Class I

Exemption		Applicable to categories ¹⁾	End
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)	1 to 7 and 10, 8, 9 other than in vitro and industrial	2015.4.13
4(e)	Mercury in metal halide lamps (MH)	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned	9 (industrial), 11	2024.7.21
		1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
4(g)	Hand-crafted Luminous Discharge Tubes (HLDT)- used for signs, decorative or architectural and specialist lighting and light-artwork	8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
		-	2018.12.31
5(a)	Lead in glass of cathode ray tubes	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2 % by weight	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	1 to 7 and 10	2019.6.30
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
6(a)-I	- Lead as an alloying element in steel for machining purposes containing up to 0,35 % - Lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight	-	2021.7.21

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1) Class I

Exemption		Applicable to categories ¹⁾	End
6(b)	Lead as an alloying element in aluminium containing up to 0.4 % lead by weight	1 to 7 and 10	2019.6.30
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
6(b)- I	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling	-	2021.7.21
6(b)- II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight	-	2021.5.18
6(c)	Copper alloy containing up to 4 % lead by weight	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
7(a)	Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead)	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
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 ceramic matrix compound	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
7(c)- II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21

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1) Class I

	Exemption	Applicable to categories ¹⁾	End
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	-	2013.1.1
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	-	2012.1.1
8(b)	Cadmium and its compounds in electrical contacts	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
8(b)-I	Cadmium and its compounds in electrical contacts used in: <ul style="list-style-type: none"> - circuit breakers; - thermal sensing controls; - thermal motor protectors (excluding hermetic thermal motor protectors); - AC switches rated at: <ul style="list-style-type: none"> . 6A and more at 250V AC and more; or . 12A and more at 125V AC and more; - DC switches rated at 20 A and more at 18 V DC and more - switches for use at voltage supply frequency ≥ 200 Hz 	1 to 7 and 10	2021.7.21
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	1 to 7 and 10	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	1 to 7 and 10	2018.7.5
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
9(b)-I	Lead in bearing shells and bushes for refrigerant-containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications	-	2019.7.21

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1) Class I

	Exemption	Applicable to categories ¹⁾	End
11(a)	Lead used in C-press compliant pin connector systems	-	2010.9.24
11(b)	Lead used in other than C-press compliant pin connector systems	-	2013.1.1
12	Lead as a coating material for the thermal conduction-module C-ring	-	2010.9.24
13(a)	Lead in white glasses used for optical applications	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	1 to 7 and 10	2018.7.5
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
13(b)-I	Lead in ion coloured optical filter glass types	1 to 7 and 10	2021.7.21
13(b)-II	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	1 to 7 and 10	2021.7.21
13(b)-III	Cadmium and lead in glazes used for reflectance standards	1 to 7 and 10	2021.7.21
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	-	2011.1.1
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	1 to 7 and 10	2020.2.29
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
15(a)	"Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: - a semiconductor technology node of 90 nm or larger; - a single die of 300 mm ² or larger in any semiconductor technology node; - stacked die packages with die of 300 mm ² or larger, or silicon interposers of 300 mm ² or larger."	1 to 7 and 10	2021.7.21
16	Lead in linear incandescent lamps with silicate coated tubes	-	2013.9.1
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21

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1) Class I

Exemption		Applicable to categories ¹⁾	End
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 MgSi2 O7 :Pb)	-	2011.1.1
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 (BaSi2 O5 :Pb)	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
18(b)-I	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP (BaSi2O5:Pb) when used in medical phototherapy equipment, excluding applications covered by entry 34 of Annex IV	5, 8	2021.7.21
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)	-	2011.6.1
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid-Crystal Displays (LCDs)	-	2011.6.1
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	1 to 7 and 10	2020.2.29
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
21(a)	Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE	1 to 7 and 10	2021.7.21
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	1 to 7 and 10	2021.7.21
21(c)	Lead in printing inks for the application of enamels on other than borosilicate glasses	1 to 7 and 10	2021.7.21
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	-	2020.9.24
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21

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1) Class I

Exemption		Applicable to categories ¹⁾	End
26	Lead oxide in the glass envelope of black light blue lamps	-	2011.6.1
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	-	2010.9.24
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1)	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
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	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
34	Lead in cermet-based trimmer potentiometer elements	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21

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1) Class I

	Exemption	Applicable to categories ¹⁾	End
36	Mercury used as a cathode sputtering inhibitor in DC-plasma displays with a content up to 30 mg per display	-	2010.7.1
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	1 to 7 and 10	2021.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	1 to 7 and 10	2016.7.21
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm² of light-emitting area) for use in solid state illumination or display systems	-	2018.11.20
39(a)	Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 µg Cd per mm ² of display screen area)	-	-
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment	-	2013.12.31
41	Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council	1 to 7 and 10, 11	-
		8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
42	Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment with engine total displacement ≥ 15 litres;	11	2024.7.21

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1) Class I

Exemption ²⁾		Applicable to categories ¹⁾	End
Equipment utilizing or detecting ionizing radiation			
IV-1	Lead, cadimium and mercury in detectors for ionising radiation.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-2	Lead bearings in X-ray tubes.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-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.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-5	Lead in shielding for ionising radiation.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-6	Lead in X-ray test objects.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-7	Lead stearate X-ray diffraction crystals.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21

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1) Class I

Exemption ²⁾		Applicable to categories ¹⁾	End
Sensors, detectors and electrodes			
IV-1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	8 8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-1b	Lead anodes in electrochemical oxygen sensors. Lead, cadmium and mercury in infra-red light detectors.	8 (8, 9 other than in vitro and industrial)	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-1c	Lead anodes in electrochemical oxygen sensors. Lead, cadmium and mercury in infra-red light detectors.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-1d	Lead anodes in electrochemical oxygen sensors.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
기타			
IV-9	Cadmium in helium-cadmium lasers.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-10	Lead and cadmium in atomic absorption spectroscopy lamps.	88, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-11	Lead in alloys as a superconductor and thermal conductor in MRI.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-12	Lead and cadmium in metallic bonds to superconducting materials in MRI and SQUID detectors.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21

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1) Class I

Exemption ²⁾		Applicable to categories ¹⁾	End
IV-13	Lead in counterweights.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-14	Lead in single crystal piezoelectric materials for ultrasonic transducers.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-15	Lead in solders for bonding to ultrasonic transducers.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-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.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-17	Lead in solders in portable emergency defibrillators.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μ.m.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-19	Lead in Liquid crystal on silicon (LCoS) displays.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-20	Cadmium in X-ray measurement filters.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21

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1) Class I

	Exemption ²⁾	Applicable to categories ¹⁾	End
IV-21	Cadmium in phosphor coatings in image intensifiers for X-ray images until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020	8, 9	2019.12.31
IV-22	Lead acetate marker for use in stereotactic head frames for use with CT and MRI and in positioning systems for gamma beam and particle therapy equipment.	8, 9	2021.6.30
IV-23	Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation.	8, 9 other than industrial	2021.6.30
IV-24	Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers.	8, 9	2019.12.31
IV-25	Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below – 20 °C under normal operating and storage conditions.	8, 9	2021.6.30
IV-26	Lead in the following applications that are used durably at a temperature below – 20 °C under normal operating and storage conditions: (a) solders on printed circuit boards; (b) termination coatings of electrical and electronic components and coatings of printed circuit boards; (c) solders for connecting wires and cables; (d) solders connecting transducers and sensors. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below – 150 °C.	8, 9	2021.6.30
IV-27	Lead in — solders, — termination coatings of electrical and electronic components and printed circuit boards, — connections of electrical wires, shields and enclosed connectors, which are used in (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy.	8, 9	2020.6.30
IV-28	Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards.	8, 9	2017.12.31
IV-29	Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	8, 9	2021.6.30
IV-30	Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.	8, 9	2019.12.31

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1) Class I

	Exemption ²⁾	Applicable to categories ¹⁾	End
IV-31	Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices placed on the market before 22 July 2014 and used in category 8 equipment placed on the market before 22 July 2021, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.	8, 9	2017.11.5
IV-31a	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-32	Lead in solders on printed circuit boards of detectors and data acquisition units for Positron Emission Tomographs which are integrated into Magnetic Resonance Imaging equipment.	8, 9	2019.12.31
IV-33 IIa	Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa mobile medical devices other than portable emergency defibrillators	8, 9	2016.6.30
IV-33 IIb	Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIb mobile medical devices other than portable emergency defibrillators	8, 9	2020.12.31
IV-34	Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP (BaSi 2 O 5 :Pb) phosphors	8, 9 other than industrial	2021.7.22
IV-35	Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017	9 (industrial)	2024.7.21
IV-36	Lead used in other than C-press compliant pin connector systems for industrial monitoring and control instruments. Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.	9 (industrial)	2020.12.31
IV-37	"Lead in platinized platinum electrodes used for conductivity measurements where at least one of the following conditions applies: (a) wide-range measurements with a conductivity range covering more than 1 order of magnitude (e.g. range between 0,1 mS/m and 5 mS/m) in laboratory applications for unknown concentrations; (b) measurements of solutions where an accuracy of +/- 1 % of the sample range and where high corrosion resistance of the electrode are required for any of the following: (i) solutions with an acidity < pH 1; (ii) solutions with an alkalinity > pH 13; (iii) corrosive solutions containing halogen gas; (c) measurements of conductivities above 100 mS/m that must be performed with portable instruments."	8, 9	-

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1) Class I

	Exemption ²⁾	Applicable to categories ¹⁾	End
IV-38	Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of computed tomography and X-ray systems. Expires on 31 December 2019. May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.	8, 9	2019.12.31
IV-39	"Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present: (a) a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness + space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable; (b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies: (i) a response time shorter than 25 ns; (ii) a sample detection area larger than 149 mm ² ; (iii) a multiplication factor larger than 1,3 × 10 ³ . (c) a response time shorter than 5 ns for detecting electrons or ions; (d) a sample detection area larger than 314 mm ² for detecting electrons or ions; (e) a multiplication factor larger than 4,0 × 10 ⁷ "	8, 9 other than in vitro and industrial	2021.7.21
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-40	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments. Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.	9 (industrial)	2020.12.31
IV-41	Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases.	8 (in vitro)	-
IV-42	Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation	8, 9 other than in vitro and industrial	-
IV-43	Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required	9 (industrial)	2023.7.15

1) Refer to EU RoHS Directive Annex I; 1(Large household appliances), 2(Small household appliances), 3(IT and telecommunications equipment), 4(Consumer equipment), 5(Lighting equipment), 6(Electrical and electronic tools), 7(Toys, leisure and sports equipment), 8(Medical devices), 9(Monitoring and control instruments), 10(Automatic dispensers), 11(Other EEE)

2) Exemption title "IV" indicated to EU RoHS Directive Annex IV.

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2) Class II

Exemption		End
PF-1	Photoresists or anti reflective coatings for photolithography process	-
PF-2	Photographic coatings applied to films, papers, or printing plates	2015.12.31
PF-3	Mist suppressants for non-decorative hard chromium (VI)	-

3) Class III

Exemption		End
AT-1	Added in ceramics for certain electronic components	2012.1.31 (HHP)
AT-2	Used as a catalyst in polymeric materials for certain electronic components	2012.1.31 (HHP)
AT-3	Additives in optical glass for preventing air bubbles and removing impurities.	-
AT-4	Resistive layer inside Resistor Chip for technical reason	-
AT-5	Antimony in high melting temperature type solders	-
AT-6	Additives for thermal conduction on N type semiconductor(Bi ₂ (Te, Se ₃) and P type semiconductor((Bi, Sb) ₂ Te ₃) Used in Thermal Electronic devices	-
BE-1	Beryllium alloy used in connectors and certain electronic components	-

4) Exemptions of Substances in Packages

Exemption		End
P-1	<ul style="list-style-type: none"> - 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) <ul style="list-style-type: none"> · 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 	-

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Annex 3 : Examples of substances and its compounds

1) [Class I] Cadmium and its compounds

Substance name	CAS No
Cadmium	7440-43-9
Cadmium alloys	-
Cadmium oxide	1306-19-0
Cadmium sulphide	1306-23-6
Cadmium carbonate	513-78-0
Cadmium chloride	10108-64-2
Cadmium nitrate	10325-94-7
Cadmium nitrate tetrahydrate	10022-68-1
Cadmium sulphate	10124-36-4, 31119-53-6
Cadmium stearate	2223-93-0
Cadmium fluoride	7790-79-6
Other cadmium compounds	-

2-1) [Class I] Lead and its compounds

Substance name	CAS No
Lead; metal	7439-92-1
Lead/Tin alloy	-
Lead monoxide (lead oxide)	1317-36-8
Lead(IV)oxide	1309-60-0
Dilead trioxide	-
Orange lead (lead tetroxide)	1314-41-6
Lead diazide, 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 bis(tetrafluoroborate)	13814-96-5
Lead fluosilicate	25808-74-6
Lead dinitrate	10099-74-8
Lead carbonate	598-63-0
Lead hydroxycarbonate	1344-36-1
Lead perchlorate	13637-76-8
Lead(II) sulfate	7446-14-2, 15739-80-7
Tetralead trioxide sulphate	12202-17-4
Lead(II) phosphate	7446-27-7
Lead thiocyanate	592-87-0
Lead(II)acetate, trihydrate	6080-56-4
Lead di(acetate)	301-04-2
Lead(IV)acetate	546-67-8
Lead oleate	1120-46-3
Lead stearate	1072-35-1, 7428-48-0

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2-2) [Class I] Lead and its compounds

Substance name	CAS No
Lead(II)metaborate	10214-39-8
Silicic acid, lead salt	11120-22-2
Lead antimonite	13510-89-9
Lead hydrogen arsenate	7784-40-9
Lead(II)arsenite	10031-13-7
Lead sulfochromate yellow (C.I. Pigment Yellow 34) This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77603.	1344-37-2
Lead molybdate	10190-55-3
Calcium plumbate	12013-69-3
Tetramethyl lead	75-74-1
Tetraethyllead	78-00-2
Trilead bis(carbonate)dihydroxide	1319-46-6
Lead selenide	12069-00-0
Lead titanium trioxide	12060-00-3
Lead sulfate, sulphuric acid, lead salt	15739-80-7
Lead chromate	7758-97-6
Lead(II) bis(methanesulfonate)	17570-76-2
Lead dipicrate	6477-64-1
Lead styphnate	15245-44-0
Trilead diarsenate	3687-31-8
Lead chromate molybdate sulphate red (C.I. Pigment Red 104) This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77605.	12656-85-8
Pyrochlore, antimony lead yellow This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77588.	8012-00-8
Lead titanium zirconium oxide	12626-81-2
Silicic acid (H ₂ Si ₂ O ₅), barium salt (1:1), lead-doped with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008	68784-75-8
Lead oxide sulfate	12036-76-9
Acetic acid, lead salt, basic	51404-69-4
[Phthalato(2-)]dioxotrilead	69011-06-9
Dioxobis(stearato)trilead	12578-12-0
Pentalead tetraoxide sulphate	12065-90-6
Trilead dioxide phosphonate	12141-20-7
Fatty acids, C16-18, lead salts	91031-62-8
Sulfurous acid, lead salt, dibasic	62229-08-7
Lead cyanamidate	20837-86-9
Other Lead compounds	-

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3) [Class I] 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
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) [Class I] Hexavalent chromium and its compounds

Substance name	CAS No
Chromium trioxide	1333-82-0
Lithium chromate	14307-35-8
Sodium chromate	7775-11-3
Potassium chromate	7789-00-6
Potassium 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	7789-06-2
Barium Chromate	10294-40-3
Lead chromate	1344-38-3
Zinc chromate	12018-19-8, 13530-65-9, 14018-95-2
Sodium dichromate	10588-01-9, 7789-12-0
Ammonium dichromate	7789-09-5
Calcium dichromate	14307-33-6
Chromic acid	7738-94-5
Dichromic acid	13530-68-2
Copper chromite	12053-18-8
Zinc dichromate	14018-95-2
Potassium dichromate	7778-50-9
Other chromium compound	-

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5) [Class I] Polybrominated biphenyls (PBBs)

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

6) [Class I] Polybrominated diphenylethers (PBDEs)

Substance name	CAS No
4-BROMODIPHENYL ETHER (PBDE)	101-55-3
Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	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	-

7) [Class I] Benzyl butyl phthalate (BBP)

Substance name	CAS No
Benzyl butyl phthalate (BBP)	85-68-7

8) [Class I] Dibutyl phthalate (DBP)

Substance name	CAS No
Dibutyl phthalate (DBP)	84-74-2

9) [Class I] Bis (2-ethylhexyl)phthalate (DEHP)

Substance name	CAS No
Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7

10) [Class I] Diisobutyl phthalate (DIBP)

Substance name	CAS No
Diisobutyl phthalate(DIBP)	84-69-5

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11) [Class II] Polychlorinated biphenyls (PCBs) / Polychlorinated Terphenyls (PCTs)/ Polychlorinated naphthalenes (PCNs): with 3 or more chlorine substituents

Substance name	CAS No
Polychlorinated biphenyls(PCB)	1336-36-3
Polychlorinated terphenyls(PCT)	61788-33-8
Polychlorinated naphthalenes(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
Monomethyl-dichlorodiphenyl methane, Trade name: Ugilec121	81161-70-8
2,4,4'-trichlorobiphenyl	7012-37-5
2,2',5,5'-Tetrachlorobiphenyl (PCB 52)	35693-99-3
2,4,5,2',5'-pentachlorobiphenyl (PCB 101)	37680-73-3
2,4,5,3',4'-Pentachlorobiphenyl (PCB 118)	37508-00-6
2,2',3',4,4',5-Hexachlorobiphenyl (PCB 138)	35065-28-2
2,2',4,4',5,5'-Hexachloro-1,1'-biphenyl (PCB 153)	35065-27-1
2,3,4,5,2',4',5'-Heptachlorobiphenyl (PCB 180)	35065-29-3
Other PCBs, PCTs, PCNs and its compounds	-

12-1) [Class II] Ozone layer depleting substances(ODS)

Substance name	CAS No
CFC-11 (CFCl ₃)	75-69-4
CFC-12 (CF ₂ Cl ₂)	75-71-8
CFC-113 (C ₂ F ₃ Cl ₃)	76-13-1
CFC-114 (C ₂ F ₄ Cl ₂)	1320-37-2
CFC-115 (C ₂ F ₅ Cl)	76-15-3
CFC-13 (CF ₃ Cl)	75-72-9
CFC-111 (C ₂ FCl ₅)	354-56-3
CFC-112 (C ₂ F ₂ Cl ₄)	28605-74-5
CFC-211 (C ₃ FCl ₇)	135401-87-5
CFC-212 (C ₃ F ₂ Cl ₆)	3182-26-1
CFC-213 (C ₃ F ₃ Cl ₅)	2354-06-5
CFC-214 (C ₃ F ₄ Cl ₄)	2268-46-4
CFC-215 (C ₃ F ₅ Cl ₃)	1652-81-9
CFC-216 (C ₃ F ₆ Cl ₂)	661-97-2
CFC-217 (C ₃ F ₇ Cl)	422-86-6
Halon-1211 (CF ₂ BrCl)	353-59-3
Halon-1301 (CF ₃ Br)	75-63-8
Halon-2402 (C ₂ F ₄ Br ₂)	124-73-2
Carbon tetrachloride (CCl ₄)	56-23-5
Methylchloroform (C ₂ H ₃ Cl ₃)	71-55-6
Methyl bromide (CH ₃ Br)	-
HBFC-21B2 (CHFBr ₂)	1868-53-7

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12-2) [Class II] Ozone layer depleting substances(ODS)

Substance name	CAS No
HBFC-22B1 (CHF2Br)	1511-62-2
HBFC-31B1 (CH2FBr)	373-52-4
HBFC-121B4 (C2HFBr4)	306-80-9
HBFC-122B3 (C2HF2Br3)	-
HBFC-123B2 (C2HF3Br2)	354-04-1
HBFC-124B1 (C2HF4Br)	124-72-1
HBFC-131B3 (C2H2FBr3)	-
HBFC-132B2 (C2H2F2Br2)	75-82-1
HBFC-133B1 (C2H2F3Br)	421-06-7
HBFC-141B2 (C2H3FBr2)	358-97-4
HBFC-142B1 (C2H3F2Br)	-
HBFC-151B1 (C2H4FBr)	762-49-2
HBFC-221B6 (C3HFBr6)	-
HBFC-222B5 (C3HF2Br5)	-
HBFC-223B4 (C3HF3Br4)	-
HBFC-224B3 (C3HF4Br3)	-
HBFC-225B2 (C3HF5Br2)	431-78-7
HBFC-226B1 (C3HF6Br)	-
HBFC-231B5 (C3H2FBr5)	-
HBFC-232B4 (C3H2F2Br4)	-
HBFC-233B3 (C3H2F3Br3)	-
HBFC-234B2 (C3H2F4Br2)	-
HBFC-235B1 (C3H2F5Br)	460-88-8
HBFC-241B4 (C3H3FBr4)	-
HBFC-242B3 (C3H3F2Br3)	70192-80-2
HBFC-243B2 (C3H3F3Br2)	431-21-0
HBFC-244B1 (C3H3F4Br)	679-84-5
HBFC-251B1 (C3H4FBr3)	75372-14-4
HBFC-252B2 (C3H4F2Br2)	460-25-3
HBFC-253B1 (C3H4F3Br)	421-46-5
HBFC-261B2 (C3H5FBr2)	51584-26-0
HBFC-262B1 (C3H5F2Br)	-
HBFC-271B1 (C3H6FBr)	352-91-0
HCFC-21 (CHFCI2)	75-43-4
HCFC-22 (CHF2CI)	75-45-6
HCFC-31 (CH2FCI)	593-70-4
HCFC-121 (C2HFCl4)	354-14-3
HCFC-122 (C2HF2Cl3)	354-21-2
HCFC-123 (C2HF3Cl2)	306-83-2
HCFC-124 (C2HF4Cl)	2837-89-0
HCFC-131 (C2H2FCl3)	134237-34-6
HCFC-132 (C2H2F2Cl2)	25915-78-0
HCFC-133 (C2H2F3Cl)	75-88-7
HCFC-141 (C2H3FCl2)	25167-88-8
HCFC-141b (CH3CFCl2)	1717-00-6
HCFC-142 (C2H3F2Cl)	25497-29-4
HCFC-142b (CH3CF2Cl)	75-68-3

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12-3) [Class II] Ozone layer depleting substances(ODS)

Substance name	CAS No
HCFC-151 (C2H4FCI)	1615-75-4
HCFC-221 (C3HFCI6)	134237-35-7
HCFC-222 (C3HF2CI5)	134237-36-8
HCFC-223 (C3HF3CI4)	134237-37-9
HCFC-224 (C3HF4CI3)	134237-38-0
HCFC-225 (C3HF5CI2)	128903-21-9
HCFC-225ca (CF3CF2CHCI2)	422-56-0
HCFC-225cb (CF2CICF2CHCIF)	507-55-1
HCFC-226 (C3HF6CI)	134308-72-8
HCFC-231 (C3H2FCI5)	134190-48-0
HCFC-232 (C3H2F2CI4)	134237-39-1
HCFC-233 (C3H2F3CI3)	134237-40-4
HCFC-234 (C3H2F4CI2)	127564-83-4
HCFC-235 (C3H2F5CI)	134237-41-5
HCFC-241 (C3H3FCI4)	134190-49-1
HCFC-242 (C3H3F2CI3)	134237-42-6
HCFC-243 (C3H3F3CI2)	134237-43-7
HCFC-244 (C3H3F4CI)	134190-50-4
HCFC-251 (C3H4FCI3)	134190-51-5
HCFC-252 (C3H4F2CI2)	134190-52-6
HCFC-253 (C3H4F3CI)	134237-44-8
HCFC-261 (C3H5FCI2)	134237-45-9
HCFC-262 (C3H5F2CI)	134190-53-7
HCFC-271 (C3H6FCI)	134190-54-8
Bromochloromethane (CH2BrCI)	74-97-5
Halon-1202 (CBr2F2)	75-61-6
1-bromopropane (n-propyl bromide) (C3H7Br)	106-94-5
Ethyl bromide (C2H5Br)	74-96-4
Trifluoromethyl iodide (CF3I)	2314-97-8
Methyl chloride (CH3CI)	74-87-3
Other Ozone depleting substances and its compounds	-

12-4) [Class II] Greenhouse Gas(GHG)

Substance name	CAS No
Carbon tetrafluoride (Perfluoromethane)	75-73-0
Perfluoroethane (Hexafluoroethane)	76-16-4
Perfluoropropane (Octafluoropropane)	76-19-7
Perfluorobutane (Decafluorobutane)	355-25-9
Perfluoropentane (Dodecafluoropentane)	678-26-2
Perfluorohexane (Tetradecafluorohexane)	355-42-0
Perfluorocyclobutane	115-25-3
Sulfur Hexafluoride (SF6)	2551-62-4
HFC-23 (CHF3)	75-46-7
HFC-32 (CH2F2)	75-10-5
HFC-41 (CH3F)	593-53-3

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12-5) [Class II] Greenhouse Gas(GHG)

Substance name	CAS No
HFC-43-10mee (C5H2F10)	138495-42-8
HFC-125 (C2HF5)	354-33-6
HFC-134 (C2H2F4)	359-35-3
HFC-134a (CH2FCF3)	811-97-2
HFC-152a (C2H4F2)	75-37-6
HFC-143 (C2H3F3)	430-66-0
HFC-143a (C2H3F3)	420-46-2
HFC-227ea (C3HF7)	431-89-0
HFC-236cb (CH2FCF2CF3)	677-56-5
HFC-236ea (CHF2CHFCF3)	431-63-0
HFC-236fa (C3H2F6)	690-39-1
HFC-245ca (C3H3F5)	679-86-7
HFC-245fa (CHF2CH2CF3)	460-73-1
HFC-365mfc (CF3CH2CF2CH3)	406-58-6
Other GHGs	-

13) [Class II] 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	-

14) [Class II] 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
Formaldehyde, oligomeric reaction products with aniline	25214-70-4
Other Formaldehydes and its compounds	-

15-1) [Class II] 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 (Short Chain Chlorinated Paraffins)	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

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15-2) [Class II] Short-chain chlorinated paraffins: Alkane 10-13 Carbon chain (SCCPs)

Substance name	CAS No
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	-

16) [Class II] Azo colorants

Substance name	CAS No
2,4,5-trimethylaniline	137-17-7
2,4-diaminoanisole	615-05-4
4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7
2-naphthylamine	91-59-8
3,3-dichlorobenzidine	91-94-1
3,3-dimethylbenzidine	119-93-7
3,3-dimethoxybenzidine	119-90-4
4,4'-methylenedi-o-toluidine	838-88-0
4,4'- Diaminodiphenylmethane (MDA)	101-77-9
2,2'-dichloro-4,4'-methylenedianiline	101-14-4
4,4'-oxydianiline	101-80-4
4,4-thiodianiline	139-65-1
4-Aminoazobenzene	60-09-3
Biphenyl-4-ylamine	92-67-1
4-chloro-o-toluidine	95-69-2
5-nitro-o-toluidine	99-55-8
Benzidine	92-87-5
o-aminoazotoluene	97-56-3
o-Toluidine	95-53-4
p-chloroaniline	106-47-8
6-methoxy-m-toluidine (p-cresidine)	120-71-8
2-Methoxyaniline; o-Anisidine	90-04-0
2,4-xylydine	95-68-1
2,6-xylydine	87-62-7
4,4'-oxydianiline and its salts	-
Other Azo and its compounds	-

17-1) [Class II] Nickel and its compounds

Substance name	CAS No
Nickel	7440-02-0
Nickel(II)oxide	1313-99-1
Nickel Sulfate	7786-81-4
Nickel Sulfamate solution	13770-89-3
Nickel carbonate	3333-67-3
NICKEL(III)HYDROXIDE	12125-56-3
Nickel dihydroxide	12054-48-7
Nickel dioxide	12035-36-8

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17-2) [Class II] Nickel and its compounds

Substance name	CAS No
Tetracarbonylnickel	13463-39-3
Nickel di(acetate)	373-02-4
Other Nickel and its compounds	-

18-1) [Class II] Organic tin compounds (TBT/TPT/DOT)

Substance name	CAS No
Tributyltin (TBT)	56573-85-4
Triphenyltin (TPT)	668-34-8
Bis(tributyltin)oxide (TBTO)	56-35-9
Copolymer 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
Tributyltin acetate	56-36-0
Tributyltin bromide	1461-23-0
Tributyltin chloride	1461-22-9
Triisobutyltin chloride	7342-38-3
Tributyltin fluoride	1983-10-4
Tributyltin fumarate	6454-35-9
Tributyltin laurate	3090-36-6
Tributyltin naphthenate	85409-17-2
Tributyltin phthalate	4782-29-0
Tributyltin rosin salts	26239-64-5
Tributyltin sulfamate	6517-25-5
Tributyltin cyclopentane carbonate=mixture	5409-17-2
Tributyltinmethacrylate	2155-70-6
Triphenyltin acetate(fentin acetate)	900-95-8
Triphenyltin chloride	639-58-7
Triphenyltin chloro acetate	7094-94-2
Triphenyltin fluoride(fentin fluoride)	379-52-2
Triphenyltin hydroxide	76-87-9
Triphenyltin N, N'' -dimethyldithiocarbamate	1803-12-9
Triphenyltin fatty acid((9-11) salt)	18380-71-7, 18380-72-8, 47672-31-1, 94850-90-5
Tributyltin maleate	14275-57-1
Other Organictin and its compounds	-
Diocetyl tin (DOT)	26401-97-8
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
Diocetyl tin bis(isooctyl maleate) (DOT)	33568-99-9
Diocetyl tin dichloride (DOT)	3542-36-7
Diocetyl tin dilaurate (DOT)	3648-18-8
Diocetyl tin maleate (DOT)	16091-18-2
Diocetyl tin oxide (DOT)	870-08-6
Diocetyl tin (DOT) compounds	-

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18-2) [Class II] Organic tin compounds (DBT)

Substance name	CAS No
Dibutyl tin (DBT)	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
Dibutyltin 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)	2781-09-01
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 (DBTC)	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 (DBTO)	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
Other Dibutyltin (DBT) compounds	-

19-1) [Class II] Arsenic compounds and its compounds

Substance name	CAS No
Diarsenic trioxide	1327-53-3
Diarsenic pentaoxide	1303-28-2
Arsenic	7440-38-2
Arsenic acid disodium salt, Heptahydrate	10048-95-0
Arsenic acid, copper salt	10103-61-4
Arsenic acid, diammonium salt	7784-44-3
Arsenic acid	7778-39-4
Arsenic acid, magnesium salt	10103-50-1
Arsenic trichloride	7784-34-1

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19-2) [Class II] Arsenic compounds and its compounds

Substance name	CAS No
Arsenic trihydride	7784-42-1
Arsenious acid, copper(II) salt	10290-12-7
Arsenious acid, potassium salt	10124-50-2
Calcium arsenate	7778-44-1
Triethyl arsenate	15606-95-8
Gallium arsenide	1303-00-0
Other Arsenic acid and its salts	-

20) [Class II] Perfluorooctane Sulfonates (PFOSs)

Substance name	CAS No
Perfluorooctane Sulfonates (PFOS) C ₈ F ₁₇ SO ₂ X, where X = OR, NR or other derivative	-
Perfluorooctane sulfonic acid and its salts	1763-23-1
Perfluorooctane sulfonyl fluoride	24448-09-7
Heptadecafluorooctanesulphonic acid, compound with 2,2'-iminodiethanol (1:1)	70225-14-8
Potassium heptadecafluorooctane-1-sulphonate	2795-39-3
Lithium heptadecafluorooctanesulphonate	29457-72-5
Tetraethylammonium heptadecafluorooctanesulphonate	56773-42-3
Ammonium heptadecafluorooctanesulphonate	29081-56-9
Heptadecafluorooctanesulphonamide	754-91-6
PFOS Ion	45298-90-6
PFOS Triphenylsulfonium Salt	144089-15-6
PFOS Sodium Salt	4021-47-0
1-Decanaminium, N-decyl-N,N-dimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1)	251099-16-8
N-ethylheptadecafluorooctanesulphonamide	4151-50-2
Heptadecafluoro-N-methyloctanesulphonamide	31506-32-8
N-ethylheptadecafluoro-N-(2-hydroxyethyl)octanesulphonamide	1691-99-2

21) [Class II] DMF

Substance name	CAS No
Biocide dimethylfumarate	624-49-7

22) [Class II] PCP

Substance name	CAS No
Pentachlorophenol	87-86-5
Other Pentachlorophenol and its salts	-

23) [Class II] PFOA

Substance name	CAS No
Pentadecafluorooctanoic acid (PFOA)	335-67-1
Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
Perfluorooctanoic acid sodium salt	335-95-5
Perfluorooctanoic acid potassium salt	2395-00-8
Silver perfluorooctanoate	335-93-3
Perfluorooctanoyl fluoride	335-66-0
Methyl perfluorooctanoate	376-27-2
Ethyl perfluorooctanoate	3108-24-5
Other PFOAs	-

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24) [Class II] PAHs

Substance name	CAS No
Benzo[a]pyrene (BaP)	50-32-8
Dibenzo[a,h]anthracene (DBA _h A)	53-70-3
Benzo[a]anthracene (BaA)	56-55-3
Chrysen (CHR)	218-01-9
Benzo[j]fluoranthene (BjFA)	205-82-3
Benzo[b]fluoranthene (BbFA)	205-99-2
Benzo[k]fluoranthene (BkFA)	207-08-9
Benzo[e]pyrene (BeP)	192-97-2

25) [Class II] Bisphenol A

Substance name	CAS No
Bisphenol A	80-05-7

26) [Class II] HBCDD

Substance name	CAS No
Hexabromocyclododecane	25637-99-4
Alpha-hexabromocyclododecane	134237-50-6
Beta-hexabromocyclododecane	134237-51-7
Gamma-hexabromocyclododecane	134237-52-8
1,2,5,6,9,10-hexabromocyclododecane	3194-55-6
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified:	-

27) [Class II] Nonylphenol, Nonylphenol Ethoxylates

Substance name	CAS No
Nonylphenol	25154-52-3
Nonylphenol Ethoxylates	9016-45-9, 26027-38-3, 37205-87-1, 68412-54-4, 127087-87-0

28) [Class II] Phthalates other than Class I

Substance name	CAS No
Diisononyl phthalate(DINP)	68515-48-0, 28553-12-0
Di-isodecyl phthalate(DIDP)	68515-49-1, 26761-40-0
Di-n-octyl phthalate(DnOP)	117-84-0
Di-n-hexyl phthalate(DnHP)	84-75-3
Bis(2-methoxyethyl) phthalate(DMEP)	117-82-8
Di-iso-pentyl phthalate(DIPP)	605-50-5
n-Pentyl-isopentyl phthalate(nPIPP)	776297-69-9
Di-n-pentyl phthalate(DnPP)	131-18-0
Dicyclohexyl phthalate(DCHP)	84-61-7

29) [Class II] TCEP, TDCPP

Substance name	CAS No
Tris(2-chloroethyl) phosphate(TCEP)	115-1496-8
Tris(1,3-dichloro-2-propyl) phosphate(TDCPP)	13674-87-8

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30) [Class II] PHMG, PGH, PHMB

Substance name	CAS No
Polyhexamethyleneguanidine hydrochloride(PHMG)	57028-96-3
Polyhexamethyleneguanidine phosphate(PHMG)	89697-78-9
Poly(hexamethylenebiguanide) hydrochloride(PHMB)	27083-27-8, 32289-58-0
Oilgo(2)-ethoxy ethoxyethyl guanidine chloride(PGH)	374572-91-5

31) [Class II] CMIT, MIT

Substance name	CAS No
Chloromethylisothiazolione(CMIT)	26172-55-4
Methylisothiazolinon(MIT)	2682-20-4

32) [Class III] Tetrabromobisphenol-A (TBBP-A)

Substance name	CAS No
3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	79-94-7

33-1) [Class III] 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
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
Bis(2,3-dibromopropyl) hydrogen phosphate	5412-25-9

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33-2) [Class III] Brominated Flame Retardants and its compounds

Substance name	CAS No
Bis(2,4,6-tribromophenyl) carbonate	67990-32-3
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
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-cyclo-octane	31454-48-5
Tetra-decabromo-diphenoxy-benzene	58965-66-5
Tribromo-neopentyl-alcohol	36483-57-5
Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
Tribromo-styrene	61368-34-1
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
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
Other Brominated Flame Retardants	-

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34) [Class III] Polyvinyl chloride (PVC)

Substance name	CAS No
Polyvinyl Chloride(PVC)	93050-82-9
Polyvinyl Chloride(PVC)	9002-86-2
Polyvinylidene Chloride(PVDC)	9002-85-1
Polyvinylimidazolium Chloride(PVC)	81517-61-5
Other PVC compounds	-

35) [Class III] Phthalates

Substance name	CAS No
Diethyl phthalate(DEP)	84-66-2
Dimethyl phthalate(DMP)	131-11-3
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP)	71888-89-6
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters(DHNUP)	68515-42-4
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear(DPP)	84777-06-0
Other phthalate	-

36) [Class III] 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 oxide	1327-33-9
Antimony tetroxide	1332-81-6
Antimony trifluoride	7783-56-4
Antimony	7440-36-0
Indium antimony	1312-41-0
Other Antimony and its compounds	-

37-1) [Class III] 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

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37-2) [Class III] Beryllium and compounds

Substance name	CAS No
Beryllium sulphate tetrahydrate	7787-56-6
BERYLLIUM ALUMINUM SILICATE	1302-52-9
BERYLLIUM COPPER	11133-98-5
Beryllium-aluminium alloy	12770-50-2
Other Beryllium and its compounds	-

38) [Class III] Cobalt dichloride

Substance name	CAS No
Cobalt dichloride	7646-79-9

39) [Class III] Chlorinated Flame Retardants

Substance name	CAS Number
BROMODICHLOROMETHANE	75-27-4
CHLORENDIC ANHYDRIDE	115-27-5
CHLORINATED PARAFFINS	63449-39-8
TETRACHLOROPHTHALIC ANHYDRIDE(TCPA)	117-08-8
DICHLOROMETHANE	75-09-2
PHOSPHORUS TRICHLORIDE	7719-12-2
TRICHLOROETHYLENE	79-01-6
TRIS(2-CHLOROETHYL)PHOSPHATE	115-96-8
TRIS(CHLOROETHYL) PHOSPHATE	29716-44-7
ZINC CHLORIDE	7646-85-7

40) [Class III] Volatile Organic Compounds (VoCs)

Substance name	CAS Number
Toluene	108-88-3
Benzene	71-43-2
Formaldehyde	50-00-0
Phosphine	7803-51-2
Ethylbenzene	100-41-4
Styrene	100-42-5
m-Xylene	108-38-3
pXylene	106-42-3
o -Xylene	95-47-6
Other Volatile Organic Compounds	-

41-1) [Others] Radioactive, MCCP, Triclosan, PFRs

Category Code	Substance name	CAS Number
Radioactive Substances	Uranium-238	7440-61-1
	Radon	10043-92-2
	Americium-241	14596-10-2
	Thorium-232	7440-29-1
	Cesium (Radioactive Isotopes only)	7440-46-2 (Cs-137 010045-97-3)
	Strontium (Radioactive Isotopes only)	7440-24-6 (Sr-90 10098-97-2)
	Other radioactive substances	-
MCCP	Medium-chain chlorinated paraffins, C14-C17	85535-85-9

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41-2) [Others] Radioactive, MCCP, Triclosan, PFRs

Category Code	Substance name	CAS Number
Triclosan	Triclosan	3380-34-5
PFRs (Persistent Free Radicals)	Triphenyl phosphate(TPhP)	115-86-6

42-1) [Others] Additive Brominated compounds

Category Code	Substance name	CAS Number
Br Additive Brominated compounds	Decabromodiphenyl Ether, 2,2',3,3',4,4',5,5',6,6'-Decabromodi-phenyl ether (BDE-209)	1163-19-5
	2,4,6-Tribromophenol	118-79-6
	Ammoniumbromide	12124-97-9
	Decabromobiphenyl (decaBB)	13654-09-6
	2,2',3,4,4'-Pentabromodiphenyl ether (BDE-85)	182346-21-0
	2,2',3,4,4',5'-Hexabromodiphenyl ether (BDE-138)	182677-30-1
	2,3,4,4'-Tetrabromodiphenyl ether (BDE-66)	189084-61-5
	2',3,4,6'-Tetrabromodiphenyl ether (BDE-71)	189084-62-6
	2,2',4,4',6-Pentabromodiphenyl ether (BDE-100)	189084-66-0
	2,3',4,4',6-Pentabromodiphenyl ether (BDE-119)	189084-66-0
	2-Hydroxypropyl-2-(2-hydroxyethoxy)-ethyl-TBP	20566-35-2
	2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE-154)	207122-15-4
	2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE-183)	207122-16-5
	2,2',4,5'-Tetrabromodiphenyl ether (BDE-49)	243982-82-3
	Hexabromocyclododecane (HBCD)	25637-99-4
	2,4,6-tris(2,4,6-tribromophenoxy)-1,3,5-triazine (TTBPTAZ)	25713-60-4
	Bis-(2-ethylhexyl)-3,4,5,6-tetrabromophthalate (BEHTEBP)	26040-51-7
	Octabromobiphenyl (octaBB)	27858-07-7
	Hexabromocyclododecane (HBCD)	3194-55-6
	Penta-bromodiphenyl ether (Penta-BDE)	32534-81-9
	Octa-bromodiphenyl ether (Octa-BDE)	32536-52-0
	Ethylene Bis-Tetrabromophthalimide	32588-76-4
	1,2-Dibromo-4-(1,2-dibromoethyl) cyclohexane	3322-93-8
	2,3-Dibromopropyl-2,4,6-tribromophenyl ether (DPTE)	35109-60-5
	Hexabromobiphenyl (hexaBB)	36355-01-8
	1,2-Bis(2,4,6-tribromo-phenoxy) ethane	37853-59-1
3,3',4,4'-Tetrabromodiphenyl ether (BDE-77)	40088-47-9	
2,4,4'-Tribromobiphenyl ether (BDE-28)	41318-75-6	

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42-2) [Others] Additive Brominated compounds

Category Code	Substance name	CAS Number
Br Additive Brominated compounds	TBBS-bis-(2,3-dibromo-propylether)	42757-55-1
	2,2',3,3',4,4',5,6'-Octabromodiphenyl ether (BDE-196)	446255-38-5
	Hexahydro-1,3,5-tris(2,3-dibromopropyl)-1,3,5-triazine-2,4,6-trione	52434-90-9
	Ethylene-bis(5,6-dibromonorbornane-2,3-dicarboximide)	52907-07-0
	2,2',4,4'-Tetrabromodiphenyl ether (BDE-47)	5436-43-1
	Bis(methyl) tetrabromophtalate	55481-60-2
	Tetra-decabromodiphenoxybenzene	58965-66-5
	2,2',4,4',5-Pentabromodiphenyl ether (BDE-99)	60348-60-6
	2,4,6-Tribromoanisol (TBA)	607-99-8
	Pentabromophenol	608-71-9
	Tribromostyrene	61368-34-1
	2,4-Dibromophenol	615-58-7
	2,2',4,4',5,5'-Hexabromobiphenyl ether (BDB 153)	68631-49-2
	TBPA, glycoland propyleneoxide esters	75790-69-1
	Decabromodiphenyl ethane	84852-53-9
	Pentabromoethylbenzene	85-22-3
Pentabromotoluene	87-83-2	

43-1) [Others] Additive/Reactive Brominated compounds, Additive/Reactive Chlorinated compounds

Category Code	Substance name	CAS Number
Br Reactive Brominated compounds	FR-122P (polymer)	1195978-93- 8
	Brominated epoxy resin endcapped with tribromophenol	135229-48-0
	Brominated epoxy resin endcapped with tribromophenol	139638-58-7
	Brominated epoxy resin endcapped with tribromophenol	158725-44-1
	Tetrabromobisphenol A Bis (2,3-dibromopropyl) Ether	21850-44-2
	Tetrabromobisphenol A diallyl ether	25327-89-3
	1,2,3-Tribromophenyl-allylether	26762-91-4
	TBBA carbonate oligomer	28906-13-0
	Brominated Epoxy Polymers	30496-13-0
	2,4,6-Tribromophenyl-allylether	3278-89-5
	TBBA-bisphenol A-phosgene polymer	32844-27-2
	TBBA-dimethylether	37853-61-5
	Tetrabromobisphenol S	39635-79-5
	TBBA-epichlorhydrin oligomer	40039-93-8
	TBBA bis-(2-hydroxy-ethylether)	4162-45-2
	Poly tribromostyrene	57137-10-7
	Poly(pentabromobenzyl acrylate)	59447-57-3
	Tetrabromophthalic anhydride	632-79-1
Tetrabromobisphenol A-tetrabromobisphenol A diglycidyl ether copolymer	68928-70-1	

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43-2) [Others] Additive/Reactive Brominated compounds, Additive/Reactive Chlorinated compounds

Category Code	Substance name	CAS Number	
Br	Reactive Brominated compounds		
	Poly(2,6-dibromophenylene oxide)	69882-11-7	
	TBBA-TBBA diglycidyl-ether oligomer	70682-74-5	
	TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3	
	TBBPA (Tetrabromobisphenol A)	79-94-7	
	Brominated Polystyrene	88497-56-7	
	TBBA carbonate oligomer, phenoxy end capped	94334-64-2	
Br, P	Additive Brominated compounds		
	Tris (tri bromoneopentyl) phosphate	19186-97-1	
Cl	Additive Chlorinated compounds		
		Polychlorinated biphenyls (PCB)	11120-29-9
		Polychlorinated biphenyls (PCB)	1336-36-3
		Bis(hexachlorocyclopentadieno) Cyclooctane (Dechlorane A)	13560-89-9
		Chlorinated paraffins	63449-39-8
		Paraffin oils, chloro (Chlorinated paraffins)	85422-92-0
		Alkanes, C10-13, chloro (Chlorinated Paraffins)	85535-84-8
	Alkanes, C14-17, chloro (Chlorinated paraffins)	85535-85-9	
	Reactive Chlorinated compounds	Chlorinated polymers and elastomers	184963-09-5
		Tetrachlorobisfenol A (TCBA)	79-95-8
Chlorinated polymers and elastomers (PVC)		9002-86-2	

44-1) [Others] Additive/Reactive Phosphorus compounds

Category Code	Substance name	CAS Number	
P	Additive Phosphorus compounds		
		Triphenylphosphate (TPHP)	115-86-6
		Diphenyloctyl phosphate	115-88-8
		2-ethylhexyl diphenyl phosphate	1241-94-7
		Resorcinolbis (biphenylphosphate) (PBDPP)	125997-21-9
		Tris(2,3-dibromopropyl) phosphate	126-72-7
		Tri-n-butyl phosphate (TBP)	126-73-8
		Linear alkyl diphenyl phosphate	142474-86-0
		Oligomeric ethyl ethylene phosphate/Alkylphosphate Oligomer (Fyrol PNX, Fyrol PNX LE)	184538-58-7
		Aluminum diethylphosphinate	225789-38-8
		Dimethyl propane phosphonate (DMPP)	242-555-3
		Trixylyl phosphate (TXP)	25155-23-1
		Diphenylcresyl phosphate	26444-49-5
		Isopropylated triphenyl phosphate (TIPP)	26967-76-0
		Linear alkyl diphenyl phosphate	27460-02-2
		Zinc Diethylphosphinate	284685-45-6
		Isodecyl diphenyl phosphate	29761-21-5
		Melamine Phosphate	41583-09-9
		Tetrakis(hydroxy methyl)phosphonium sulphate (THPS)	55566-30-8
		Tri-m-cresylphosphate (TMCP)	563-04-2
t-Butylated triphenyl phosphate mixture	56803-37-3		

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44-2) [Others] Additive/Reactive Phosphorus compounds

Category Code	Substance name	CAS Number	
P	Additive Phosphorus compounds	Linear alkyl diphenyl phosphate	56827-92-0
		Resorcinolbis (biphenylphosphate) (PBDPP)	57583-54-7
		Tris(2-chloropropyl) phosphate	6145-73-9
		Poly-(mphenylene methylphosphonate) (Fyrol PMP)	63747-58-0
		t-Butylated triphenyl phosphate mixture	65652-41-7
		Piperazine pyrophosphate	66034-17-1
		Tris(isobutylphenyl) phosphate	68937-40-6
		Isopropylated triphenyl phosphate (TIPP)	68937-41-7
		Isopropylated triphenyl phosphate (TIPP)	72668-27-0
		Red phosphorous	7723-14-0
		Tri-o-cresyl phosphate (TOCP)	78-30-8
		Tri-p-cresyl phosphate (TCP)	78-32-0
		t-Butylated triphenyl phosphate mixture	78-33-1
		Diethylethane phosphonate (DEEP)	78-38-6
		Triethyl phosphate (TEP)	78-40-0
		Tris(2-ethylhexyl) phosphate (TEHP)	78-42-2
		Tris(2-butoxyethyl) phosphate (TBEP)	78-51-3
P	Reactive Phosphorus compounds	Diethyl N,N bis (2-hydroxyethyl) aminomethylphosphonate	2781-11-05
		Phosphoric acid, mixed esters with [1,1'-bisphenyl 4,4'-diol] and phenol; BPBP	1003300-73-9
		Melamine Pyrophosphate	15541-60-3
		Bisphenol A bis-(diphenyl phosphate); BAPP	181028-79-5
		Melamine Polyphosphate	218768-84-4
		Dihydrooxaphosphophenantreneoxid (DOPO)	35948-25-5

45) [Others] Additive/Reactive Phosphorus compounds

Category Code	Substance name	CAS Number	
P	Reactive Phosphorus compounds	Melamine Polyphosphate	56386-64-2
		Bisphenol A bis-(diphenyl phosphate); BAPP	5945-33-5
		Ammoniumpolyphosphate	68333-79-9
		Polyphosphonat	68664-06-2
		Poly[phosphonate-co-carbonate]	77226-90-5
P,Cl	Additive Phosphorus compounds	Tris(2-chloroethyl) phosphate (TCEP)	115-96-8
		Tetrakis(hydroxymethyl)-phosphonium chloride (THPC)	124-64-1
		Tricresyl phosphate (TCP)	1330-78-5
		Tris(1-chloro-2-propyl) phosphate (TCPP)	13674-84-5
		Tris(1,3-dichloro-2-propyl)phosphate (TDCPP)	13674-87-8
		Tris(3-chloropropyl) phosphate	26248-87-3

46-1) [Others] Chlorinated compounds

Substance name	CAS Number
CHLOROENDRIC ACID	115-28-6
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

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46-2) [Others] Chlorinated compounds

Substance name	CAS Number
(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-NAPHTHALENE CARBOXAMIDE 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-(PHENYL CARBAMOYL)PHENYL)AZO)-	5280-68-2
2-NAPHTHALENECARBOXAMIDE, 3-HYDROXY-4-((2-METHOXY-5-((PHENYLAMINO)CARBONYL)PHENYL)AZO)-N-(2-METHOXY-5-CHLOROPHENYL)-	67990-05-0
1,4-BIS((1-(2,5-DICHLOROPHENYL)AZO)-2-HYDROXY-3-NAPHTHOYL)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-BIPHENYLENEBISAZO)-	3520-72-7
4(2-CHLOROETHYL)MORPHOLINE HYDROCHLORIDE	3647-69-6
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 (BaCl ₂), 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
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-(2-hydroxy-3-((2-methoxyphenyl)amino)carbonyl)-1-naphthalenyl)diazenyl)-5-methyl-,sodium salt	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-ICHLOROPHENYL)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

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46-3) [Others] Chlorinated compounds

Substance name	CAS Number
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-BUTYL 2,4-DICHLOROPHENOXYACETATE	12225-18-2
C.I. PIGMENT GREEN 7	94-80-4
C.I. PIGMENT YELLOW 83	1328-53-6
CARBONIC DICHLORIDE	5567-15-7
CHLORIDE	75-44-5
CHLORINE	16887-00-6
CHLORINE	22537-15-1
CHLORINE	7782-50-5
CHLOROANILINE	27134-26-5
CHLORO DIHYDRO QUINOA CRIDINEDIONE	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
Trisodium bis[5-chloro-3-[(4,5-dihydro-3-methyl-5-oxo-1-phenyl-1H-pyrazol-4-yl)azo]-2-hydroxybenzenesulphonato(3-)]chromate(3-)	73324-05-7
Hydrogen bis[1-[(5-chloro-2-hydroxyphenyl)azo]-2-naphtholato(2-)]chromate(1-)	31714-55-3
COBALT CHLORIDE (COCL ₂), HEXAHYDRATE	7791-13-1
COPPER PERCHLORO PHTHALOCYANINE	14832-14-5
COPPER MONOCHLORO PHTHALOCYANINE	12239-87-1
DIARYLANILIDE YELLOW	6358-85-6
DICHLORO-2,2-P-CYCLOPHANE	28804-46-8
DICHLORODIMETHYLSILANE REACTION PRODUCT WITH SILICA	68611-44-9
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 (NICL ₂)	7718-54-9
NICKEL CHLORIDE (NICL ₂), HEXAHYDRATE	7791-20-0
PARA-DICHLOROBENZENE	106-46-7
2-(2 -HYDROXY-3 -TERT-BUTYL-5 -METHYLPHENYL)-5-CHLOROBENZOTRIAZOLE	3896-11-5
2,4-dichlorophenol	120-83-2
PHOSPHONOUS DICHLORIDE, PHENYL-	644-97-3

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46-4) [Others] Chlorinated compounds

Substance name	CAS Number
PHOSPHORUS OXYCHLORIDE	10025-87-3
POLYCHLOROPRENE	9010-98-4
3-(4-((2,6-DICHLORO-4-NITROPHENYL)AZO)-N-(2-HYDROXYETHYL)ANILINO)PROPIONITRILE, ACETATE (ESTER)	5261-31-4
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
TRIETHYLAMINE HYDROCHLORIDE	554-68-7
VINYL CHLORIDE	75-01-4
Vinyl chloride-ethylene polymer	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

47-1) [Wearables] Pesticides

Substance name	CAS Number	Substance name	CAS Number
2,4,5-T	93-76-5	DDTs	50-29-3, 789-02-6
2,4-D	94-75-7	Diazinon	333-41-5
Azinophosmethyl	86-50-0	Dichlorprop	120-36-2
Azinophosethyl	2642-71-9	Dicrotophos	141-66-2
Aldrin	309-00-2	Dieldrin	60-57-1
Bromophos-ethyl	4824-78-6	Dimethoate	60-51-5
Captafol	2425-06-01	Dinoseb and salts	88-85-7
Carbaryl	63-25-2	Endosulfan, α	959-98-8
Chlordane	57-74-9	Endosulfan, β	33213-65-9
Chlordimeform	6164-98-3	Endrin	72-20-8
Chlorfenvinphos	470-90-6	Esfenvalerate	66230-04-4
Fenvalerate	51630-58-1	Malathion	121-75-5
Heptachlor	76-44-8	MCPA	94-74-6
Heptachlorepoxyde	1024-57-3	MCPB	94-81-5
Hexachlorobenzene	118-74-1	Mecoprop	93-65-2
Hexachlorcyclohexane, α	319-84-6	Metamidophos	10265-92-6
Hexachlorcyclohexane, β	319-85-7	Methoxychlor	72-43-5
Hexachlorcyclohexane, δ	319-86-8	Mirex	2385-85-5
Isodrine	465-73-6	Monocrotophos	6923-22-4
Kelevane	4234-79-1	Parathion	56-38-2
Kepone	143-50-0	Parathion-methyl	298-00-0
Lindan	58-89-9	Perthane	72-56-0
Coumaphos	56-72-4	Phosdrin/mevinphos	7786-34-7

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47-2) [Wearables] Pesticides

Substance name	CAS Number	Substance name	CAS Number
Cyfluthrin	68359-37-5	Propethamphos	31218-83-4
Cyhalothrin	91465-08-6	Profenophos	41198-08-7
Cypermethrin	52315-07-8	Quinalphos	13593-03-8
DEF	78-48-8	Strobane	8001-50-1
Deltamethrin	52918-63-5	Telodrine	297-78-9
DDDs	53-19-0, 72-54-8	Toxaphene	8001-35-2
DDEs	3424-82-6, 72-55-9	Trifluralin	1582-09-8

47-3) [Wearables] Allergenic dyestuffs

Substance name	CAS Number	Substance name	CAS Number
C.I. Disperse Blue 1	2475-45-8	C.I. Disperse Orange 37	12223-33-5
C.I. Disperse Blue 3	2475-46-9	C.I. Disperse Orange 76	13301-61-6
C.I. Disperse Blue 7	3179-90-6	C.I. Disperse Red 1	2872-52-8
C.I. Disperse Blue 26	3860-63-7	C.I. Disperse Red 11	2872-48-2
C.I. Disperse Blue 35	12222-75-2	C.I. Disperse Red 17	3179-89-3
C.I. Disperse Blue 102	12222-97-8	C.I. Disperse Yellow 1	119-15-3
C.I. Disperse Blue 106	12223-01-7	C.I. Disperse Yellow 3	2832-40-8
C.I. Disperse Blue 124	61951-51-7	C.I. Disperse Yellow 9	6373-73-5
C.I. Disperse Brown 1	23355-64-8	C.I. Disperse Yellow 39	12236-29-2
C.I. Disperse Orange 1	2581-69-3	C.I. Disperse Yellow 49	54824-37-2
C.I. Disperse Orange 3	730-40-5	-	-

47-4) [Wearables] Carcinogenic dyestuffs

Substance name	CAS Number	Substance name	CAS Number
C.I. Acid Red 26	3761-53-3	C.I. Disperse Yellow 3	2832-40-8
C.I. Basic Red 9	569-61-9	C.I. Disperse Orange 149	85136-74-9
C.I. Basic Violet 14	632-99-5	C.I. Disperse Yellow 23	6250-23-3
C.I. Direct Black 38	1937-37-7	C.I. Basic Green 4 (oxalate)	2437-29-8, 18015-76-4
C.I. Direct Blue 6	2602-46-2	C.I. Basic Green 4 (chloride)	569-64-2
C.I. Direct Red 28	573-58-0	C.I. Basic Green 4 (free)	10309-95-2
C.I. Disperse Blue 1	2475-45-8	Navy Blue	EG No. 405-665-4
C.I. Disperse Orange 11	82-28-0	-	-

47-5) [Wearables] Trichlorophenol (TriCP)

Substance name	CAS Number	Substance name	CAS Number
Pentachlorophenol	87-86-5	2,3-Dichlorophenol	576-24-9
2,3,5,6-Tetrachlorophenol	935-95-5	2,4-Dichlorophenol	120-83-2
2,3,4,6-Tetrachlorophenol	58-90-2	2,5-Dichlorophenol	583-78-8
2,3,4,5-Tetrachlorophenol	4901-51-3	2,6-Dichlorophenol	87-65-0
2,3,4-Trichlorophenol	15950-66-0	3,4-Dichlorophenol	95-77-2
2,3,5-Trichlorophenol	933-78-8	3,5-Dichlorophenol	591-35-5
2,3,6-Trichlorophenol	933-75-5	2-Chlorophenol	95-57-8
2,4,5-Trichlorophenol	95-95-4	3-Chlorophenol	108-43-0
2,4,6-Trichlorophenol	88-06-2	4-Chlorophenol	106-48-9
3,4,5-Trichlorophenol	609-19-8	-	-

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47-6) [Wearables] Examples of other residual compounds and preservatives

Substance name	CAS Number	Substance name	CAS Number
Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	2-(Thiocyanomethylthio) benzothiazol (TCMTB)	21564-17-0
2-Phenylphenol (OPP)	90-47-7	2-octylisothiazol-3(2H)-on (OIT)	26530-20-1
4-Chlro-3-methylphenol (CMC/CMK)	59-50-7	Dimethylfumarate (DMFu)	624-49-7

47-7) [Wearables] Chlorinated benzenes, chlorinated toluenes

Substance name	CAS Number	Substance name	CAS Number
Dichlorobenzene	-	Trichlorobenzene	-
Tetrachlorobenzene	-	Pentachlorobenzene	-
Hexachlorobenzene	-	Chlorotoluenes	-
Dichlorotoluenes	-	Trichlorotoluenes	-
Tetrachlorotoluenes	-	Pentachlorotoluenes	-

47-8) [Wearables] Alkylphenols(AP)

Substance name	CAS Number	Substance name	CAS Number
n-Nonylphenol	25154-52-3	tert-Octylphenol	27193-28-8

47-9) [Wearables] Alkylphenol ethoxlates(APEO)

Substance name	CAS Number	Substance name	CAS Number
Nonylphenol ethoxylate	9016-45-9	Octylphenol ethoxylate	9036-19-5

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Annex-4 : Submission format for Eco-partner certification (1/2)

Letter of Warranty and Representation (“Letter”)

To: Samsung Electronics Co., Ltd. (“SEC”) and its affiliated companies

From: _____ (“Company”)

1. Company hereby warrants and represents as follows:
 - A. Company complies with all relevant international regulations concerning the substances with environmental impacts.
 - B. Company complies with the Samsung Electronics Standards for Control of Substances with Environmental Impacts within Products “Samsung Environmental Standards, 0QA-2049” in controlling environmentally hazardous substances.
 - C. The documents and data sheets on the substances with environmental impacts contained in Company’s supplies including, without limitation, products, parts, components, raw materials and packaging materials, are accurate and truthful.

2. Company agrees to defend, hold harmless, and indemnify SEC from any claim arising out of or related to Company’s failure to comply with the above warranties and representations including, without limitation, all counsel fees and legal costs, judgments, orders, awards, as well as costs associated with additional inspections, line-stop, re-work assignments, product recalls, product service and repair, compensation, and/or any damages arising out of and/or related to any such claims.

3. This Letter shall be effective from _____ to _____, and thereafter, shall be automatically renewed for each additional year unless SEC or Company objects such renewal in writing at least a month prior to an expiration date.

4. All disputes related to this Letter shall be finally settled by arbitration. The arbitration shall Be conducted in English and in accordance with the Commercial Arbitration Rules of the Korean Commercial Arbitration Board. The arbitration shall take place in Seoul, Korea. The award rendered by the arbitrator shall be final and binding for both SEC and Company.

The undersigned is an authorized representative of the Company.

Signature: _____

Date: _____

Print Name and Title :

Company Name and Address :

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Annex-4 : Submission format for Eco-partner certification (2/2)

Declaration of Non-Use of cobalt dichloride

To : Samsung Electronics Co., Ltd. ("SEC")
From : _____ ("Company")

The Company hereby declares that the company's products that are
Delivered to Samsung Electronics do not contain "cobalt dichloride".
Covered parts of this declaration are all parts and its packaging material
provided to SEC.

The undersigned is an authorized representative of the Company.

Signature :

Name :

Position :

Sign Date :

Company Address :