SAMSUNG

Samsung Electronics
Standards for Control of Substances used in products

(SEC Registration No. 0QA-2049)

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Samsung Electronics Co., Ltd

Contents

Chapter 1 General Provision

Article 1 (Preface)

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

Article 2 (Purpose)

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)

1. 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)

2. 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

1) Restricted Substances : Substances are managed by regulation or convention and voluntary phase-out due to the potentially negative effects to the environment or the health (Among the restricted substances, RoHS Substances are classified as regulated by the EU RoHS Directive.)

2) Potentially Risk Substances : Substances which need to be monitored due to the predicted future legislative framework and restricted

3. Exemptions

The Exemptions of Restricted Substances are adopted from the decisions of EU RoHS Directive and other legislation concerning product production. The other exemptions are adopted due to inevitably required maintain specific quality, characteristic, appearance or performance of products.

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, 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.

(In the threshold limit of Art.6, Art.7 and others, "Total" means that sum of listed items should comply with threshold limit.
And "each" means that each item should comply with threshold limit individually.)

6. Precision Analysis

Precision Analysis is a test using equipment with high precision and may differ from simply screening test such as using XRF equipment.
Detailed analysis equipment includes AAS, ICP, IC and UV/VIS for Inorganic compounds and GC/MS for organic compounds.

* Organic Materials : organic compounds which are chemical compounds whose molecules contain carbon atoms. E.g. plastics, rubber, ink etc.
* Inorganic Materials : inorganic compounds which are chemical compounds not organic compounds. E.g. metal, alloy, ceramic etc.

* CV-AAS: Cold Vapor-Atomic Absorption Spectroscopy
* AFS: Atomic fluorescence Spectrometry
* DMA : Direct Mercury Analyzer
* ICP: Inductively Coupled Plasma

* UV-VIS: Ultraviolet-Visible Spectroscopy
* C-IC: Combustion Ion Chromatography
* HPLC : High Pressure Liquid Chromatography (Ultra Violet detection)
* GC/MS: Gas Chromatography/Mass Spectrometry
* IAMS : Ion Attachment Mass Spectrometry

7. ICP Data (Precision analysis Data)
Test reports issued per International Test Standards from an ISO 17025 accredited testing laboratory.

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.

Article 5 (Standard for Operation and Management)

1. The company manages Substances concerning Product Environment by classifying them as either Restricted Substances and Potentially Risk Substances. 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: RoHS Substances shall be confirmed to comply with the threshold limit, by the precision analysis data. Other restricted substances shall not be confirmed by precision analysis data. When Samsung Electronics requires, suppliers shall provide precision analysis data to Samsung Electronics and prove to comply with the threshold limits.

Chapter 2 Standard for Control of Substances concerning Product 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 which cannot be mechanically dissembled further into single materials or articles.

2. List of Control of substances in products

1) Restricted Substances

Susbtance	Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
Cadmium and its compounds (Cd)	All parts	Organic	5ppm	Jan.2005	ICP AAS AFS	IEC 62321-5:2013	pigment, anti-corrosion electric and electronic m optical material, PVC, stabilizer, plating etc	EU RoHS/Packaging/Battery OSPAR Priority Chemicals; Korea RoHS; China RoHS; Japan J-MOSS; US/CA SB-20/50; California Proposition 65
		Inorganic	80ppm					
	Skin contact parts *1)	Fiber *18)	1mg/L	Nov.2020		EPA-3051, EPA-3052		EU REACH
Lead and its compounds (Pb)	All parts	Organic	100ppm	Jan.2005	ICP AAS	IEC 62321-5:2013	hardener, stabilizer, additives, pigment, paint, lubricant plating, metal alloy	EU RoHS/Packaging/Battery California Proposition 65; OSPAR Priority Chemicals; Korea RoHS;China RoHS; Japan J-MOSS; US/CA Waste recycling; US CPSIA; EU REACH Korea Safety Law for Eletronics
		Inorganic	800ppm					
	Skin contact parts of children's product *2) *3)	Paint Coating	90ppm	Sep.2015	AFS	ASTM F963-17 EN 71-Part3 CPSC-CH-E1003-09.1		
	Skin contact parts of polymer products *9)	Others	100ppm			ASTM F963-17 EN 71-Part3 CPSC-CH-E1001/1002-08.1		
	Skin contact parts *1)	Fiber *18)	1mg/L	Nov.2020		EPA-3051, EPA-3052		
Mercury and its compounds (Hg)	All parts		800ppm		ICP CV-AAS AFS DMA	IEC 62321-4:2013	fluorescent bulb, pigment, anti-corrosion, antibacterial treatment treatment	EU RoHS/Packaging/Battery OSPAR Priority Chemicals; Korea RoHS; China RoHS; Japan J-MOSS; US/CA Waste recycling; California Proposition 65

Susbtance		Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
Hexavalent chromium and its compounds (Cr6+)		All parts		800ppm	Jan.2005	IC UV/VIS	Metal coating: IEC 62321-7-1:2015 Polymer: IEC 6231-5/62321-7	pigment, paint, ink, catalyst, anti-corrosion	EU RoHS/REACH/Packaging; OSPAR Priority Chemicals; China RoHS; Korea RoHS;
		Skin contact parts *1)	Natural leather	3ppm	May.2015		ISO 17075	surface treatment,	Japan J-MOSS; US/CA Waste recycling;
			Fiber *18)	1mg/L	Nov.2020		EPA-3060A	chromate treatment	California Proposition 65
		Skin contact parts of Wearables *4)	Polymer *5)	0.5ppm	Mar.2020	IC UV/VIS	ISO 105-E04		Samsung Voluntarily Reduction
PBBs PBDEs *5)		All parts	Organic	900ppm	Feb.2005	GC/MS HPLC/UV IAMS	IEC 62321-6:2015	flame retardant	EU RoHS; Japan J-MOSS; POPs OSPAR Priority Chemicals; China RoHS; Korea RoHS; California Proposition 65
Phthalates (19)	BBP, DBP, DEHP	All parts	Organic	900ppm each	Jul.2018	GC/MS	IEC 62321-8:2017	plasticizer, coating	EU RoHS; EU REACH;
	DIBP	Medical equipment			Jul.2020	LC/MS	EN 14372:2004	adhesive, artificial	California Proposition 65
	DEHP, DBP, BBP	Skin contact parts of polymer products *9)	Organic	1000ppm total	Oct.2020				Korea Safety Law for Eletronics
	DINP, DIDP, DnOP,	All parts	Organic	900ppm each	Jul.2019	IAMS	CPSC-CH-C1001-09.3	leather	EU REACH;
	DnHP, DMEP, DIPP	Skin contact parts of			Sep.2015	Py-GC/MS	ASTM F963-17		California Proposition 65
	nPIPP, DnPP, DCHP	children's product *2)					EN 71-Part3		California Proposition 65
							IEC 62321-8		US CPSIA
	DIHP	Skin contact parts *1)	Fiber *18)	1mg/L	Nov.2020		EPA 3540C		
	DEP, DMP, DIHP	Mobile *7)	Organic	900ppm each	Jan.2013		IEC 62321-8:2017		Samsung Voluntarily Reduction
	DHNUP, DPP	NotePC *Excl. powercable/adapter					ASTM D3421-75 EN 14372:2004		
		TV/Mon Iner Cable *Excl. panel					US EPA 3540C US CPSCCH-C1001-09.1		
		AI&IoT *8)			Jan.2019		EPA 0506		
		*Exp. PVC safety required					KSM 1991 etc		
	∑19 (BBP,DBP,DEHP,DIBP DINP,DIDP,DnOP,DnHP,DMEP DIPP,nPIPP,DnPP,DCHP,DEP DMP,DIHP,DHNUP,DPP,DPHP)	Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)	1000ppm total	Mar.2020				Samsung Voluntarily Reduction
PCBs, PCTs, PCNs		All parts		No intentional use	May.2004	GC/MS GC/ECD	EPA 8082/1668 KS C 2375, DIN EN 61619	insulation oil, lubricant oil, etc	POPs; EU REACH; Japan Chemical Law

Susbtance		Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
ODS/ Greenhouse Gas	CFCs,HCFCs,Halons	Refrigerant, foam blowing agent, extinguisha		No intentional use	May.2004	GC/ECD	EPA 8021B/524.1 EPA-524.2 etc	Refrigerant, foam blowing agent	Montreal Protocol; EU ODS/F-gas US Clean Air Act;
	HFCs(GWP>150)	Refrigerant in refrigerator for EU			Jan.2015				
	HFCs,PFCs, SF6	Refrigerant in refrigerator, foam blowing agent for Austria, Swiss, Denmark			Jan.2002				
Asbestos and its compounds		All parts		No intentional use	May.2004	TEM, SEM, Phase Contras Microscopy, X-Ray Diffract, Thermal analy	EPA-0435; JIA-A 1481 NIOSH NMAM #7400 OSHA ID-160 HSE MDHS 39/4 NIOSH 9000/9002 etc	insulator, filler, abrasive, pigment, paint, talc etc	EU REACH
Formaldehydes *10)		All parts		No intentional use	May.2004	HPLC UV/VIS Photoelectric colorimeter	ASTM D6007-2 E1333-96; EPA TO-11A ISO 16000-3 KS M ISO 16000-3 KS M 1998-1~4 etc	adhesive, antiseptic solution, preservative etc	Austria - BGB I 1990/194; US CA Code of Regulation
		Fiber *18)		0.1ppm	Apr.2011				
		Skin contact parts of Wearables *4)	Natural leather Polymer *5)	75ppm	Sep.2015		Japan Law 112 (JIS L 1041:2011) ISO 17226, EPA 8315A etc		Japan Law 112 EU REACH
SCCPs (alkane 10~13 Carbon chain)		All parts		1000ppm	Apr.2011	GC/MS GC/ECD	EPA 3540C/3550C EPA 8081B/8270D etc ISO 18219 etc	plasticizer for PVC, flame retardant etc	EU REACH POPs
Azo colorants		Fiber, leather for direct and prolonged skin contact *18) (e.g. belt, strap etc)		30ppm	May.2004	GC/MS GC/MSD HPLC	EN 14362-1~2 CEN ISO/TS 17234 etc	pigment, dyes, colorants etc	EU REACH
		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)		Mar.2020				
Nickel and its compounds (Ni)		Resurfacing & external metal for direct & prolonged skin contact (e.g. external antenna/case, belt, strap, earphone etc)		0.5μg/㎠/week *11)	May.2004	ICP/OES	EN 1811:2011+A1:2015 (3 Samples)	pigment, paint, optical thin film, conductive, surface treatment etc	EU REACH
		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)		Mar.2020				

Susbtance		Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
Organic tin compounds	TBT,TPT,DBT	All parts		1000ppm each	Jan.2012	GC/MS GC-FPD	EPA 0280 DIN 38407 etc ISO 16179/17353 etc	stabilizer, antioxidant, antimicrobial, preservative etc	EU REACH
	DOT	Fiber for skin contact(e.g. pouches) Child protection products							
Arsenic compounds and its compounds (As)		Wooden, submerged parts		No intentional use	May.2004	ICP AAS	EPA 3050B/3051/3052 EPA 200.8/6020/6010B ISO 6101-2 etc	pigment, paint, dye, flame retardants etc	EU REACH
		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)		Mar.2020				
PFOS and its compounds *12)		All parts		1000ppm	May.2008	LC/MS	US EPA 3540C (Acid/Metal Salt/Amide) US EPA 3550C/8321B etc	cleaner, Insulating oil, flux, pigment, PTFE etc	POPs; EU REACH
		Fiber & coated materials Natural leather		1 μg/㎡					
DMF (Dimethylfumarate)		All parts		0.1ppm	May.2009	GC/MS	EPA-3540C ISO/TS 16186 etc	Silica-gel, PU wood etc	EU 2009/251/EC EU REACH
PCP and its compounds		Fiber & Natural leather *18)		5ppm	Sep.2013	GC/MS	DIN 53313; US EPA 8270 etc	preservatives etc	Norway Product Regulation; EU REACH; POPs
		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)	0.5ppm	Mar.2020				
TeCP		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)	5ppm total	Mar.2020	GC/MS	ISO 17070 KS K 0733	preservatives etc	Norway Product Regulation; EU REACH
TriCP				5ppm total					
Phenol		Skin contact parts of Wearables *4)	Polymer *5)	5mg/L	Mar.2020 *17)	GC-MS	EN71-9 etc	coating, ink etc	Samsung Voluntarily Reduction
PFOA and its compounds *13)		All parts		10ppm	Sep.2013	LC/MS	US EPA 3520/3540/3550 US EPA 3550C/8321B etc	coating, preservative	Norway Product Regulation; EU REACH; POPs
		Fiber & coated materials Natural leather		1 μg/㎡					
		All parts		0.025ppm	Jul.2020				
PAHs	8 items	Skin contact parts *1)		1ppm each	Dec.2015	GC/MS	IEC 62321-10:ED1 US EPA 3630C/8100/8310 AfPS GS 2014 PAK etc	rubbers, headphones, 3D Glasses etc	EU REACH
		Skin contact parts of children's product *2)		0.5ppm each					
	24 items	Skin contact parts of Wearables *4)		1ppm each 10ppm total	Sep.2015				Samsung Voluntarily Reduction

Susbtance	Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
Bisphenol A (4,4'-isopropylidenediphenol)	Food contact parts		No intentional u	Jan.2015	GC/MS HPLC LC	EN71-10, US EPA 3540C ASTM D 7574-09, Korea Standards and Specifications for Food Utensils, Containers and Packages, EN71-9 etc	polycarbonate(PC), epoxy resin, thermal paper etc	France Food contact
	Skin contact parts of children's product *2)		0.1mg/L					Samsung Voluntarily Reduction
	Skin contact parts of Wearables *4)		0.04mg/L	Mar.2020 *17)				Samsung Voluntarily Reduction
	Thermal paper		200ppm	Jan.2020				EU REACH
Bisphenol S	Thermal paper		200ppm	Jan.2020				Swiss ORRChem
Nonylphenol Nonylphenol Ethoxylate	Leather, fiber, paper *14) *18) * Excl. medical equipment		1000ppm each	Jan.2015	HPLC LC/MS	ASTM D7485/D7065 DIN EN ISO 18254-1 etc	cleaner, surfactants	Turkey Chemical Regulation EU REACH
Alkylphenols Alkylphenol ethoxylates	Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)	100ppm total 100ppm total	Mar.2020	GC/MS LC/MS	Organic solvent extraction DIN EN ISO 18218-1 etc	cleaner, surfactants	Samsung Voluntarily Reduction
4-tert-Butylphenol	Skin contact parts of Wearables *4)		No intentional use	Nov.2020 *17)	GC/MS	ISO 10580	coating, adhesive etc	Samsung Voluntarily Reduction
TCEP, TDCPP	All parts	Orgranic	1000ppm each	Jan.2019	GC/MS HPLC/UV	IEC 62321-6:2015 EPA 3540C/3545/3550B	flame retardant etc	USA D.C. Flame Retardant
PHMG, PGH, PHMB CMIT, MIT	Air-filter(Home AC, Air-purifier) Cleaners Aroma		No intentional use	Oct.2019	MALDI-TOF M HPLC/UV HPLC/MS GC/MS	Korea MoE Standard 2018-71	disinfectant, anticorrosive agent etc.	Korea Consumer Chemical Products Act
Halogenated flame retardants	Enclosure & stand of TV/Monitor/Signage	Organic	No intentional use	Mar.2020 *17)	-	-	flame retardant etc	EU Ecodesign
Brominated Flame Retardants	Mobile *7) NotePC *Excl. powercable/adapter	Organic	Br 900ppm	Jan.2012	C-IC	IEC 62321-3-2:2013 EN 50267-2-2, EN 14582, ASTM D7359 etc	flame retardant etc	Samsung Voluntarily Reduction
	AI&IoT *8) *Exp. PVC safety required			Jan.2019				
TBBP-A	All parts	Organic	900ppm	Jan.2008	GC/MS LC/MS	EPA-3540C, EPA-3545, EPA-3550B etc	flame retardant etc	Samsung Voluntarily Reduction
HBCDD	All parts		No intentional use	Oct.2015	GC/MS LC/MS	IEC 62321-9:ED1 EPA 3540C/3545/3550B EPA 3550C/8270E etc	flame retardant etc	Norway Product Regulation EU REACH

Susbtance		Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
TPHP		Skin contact parts of Wearables *4)		No intentional use	Nov.2020 *17)	UV GC/MS	EPA 365.3 etc	flame retardant etc	Samsung Voluntarily Reduction
Chloride Flame Retardants		Mobile *7)	Organic	No intentional u	Jan.2012	C-IC	EN 50267-2-2, EN 14582, ASTM D7359 etc	flame retardant etc	Samsung Voluntarily Reduction
		AI&IoT *8) *Exp. PVC safety required		Cl 900ppm	Jan.2019				
PVC		Mobile *7) NotePC *Excl. powercable/adapter TV/Mon Iner Cable *Excl. panel	Organic	Cl 900ppm	Jan.2012	FT-IR	KS 0210 etc	wire jacket	Samsung Voluntarily Reduction
		AI&IoT *8) *Exp. PVC safety required			Jan.2019				
Antimony and compounds		Mobile *7) NotePC *Excl. powercable/adapter TV/Mon Iner Cable *Excl. panel		700ppm	Jan.2013	ICP	EPA 3050B,ISO 8124-3, EPA 3052, KSK 0852, KSK 0731, EPA 7062 etc	flame retardant etc	Samsung Voluntarily Reduction
		AI&IoT *8) *Exp. PVC safety required			Jan.2019				
Beryllium and its compounds		All parts		1000ppm	Jan.2013	ICP	EPA 3050B,ISO 8124-3, EPA 3052, KSK 0852, KSK 0731, EPA 7062 etc	connector etc	Samsung Voluntarily Reduction
		AI&IoT *8) *Exp. PVC safety required			Jan.2019				
Cobalt dichloride		All parts		No intentional use Co 1000ppm	Jun.2011	ICP	EPA-3052	silica gel, humidity Indicator	Samsung Voluntarily Reduction
VOCs	Phosphine	Mobile *7) AI&IoT *8)	Cable, cord	0.08ppm	Jan.2019	GC/MS SIFT/MS HPLC Detection tube	SEC Mobile Guidance	phosphorus FR	Samsung Voluntarily Reduction
	Toluene		Applied/ Purchasing Product Package	16ppm				adhesive, paint additive etc	
	Formaldehyde			0.08ppm					
	Benzene			0.8ppm					
			Semicon SDC *15)	No intentional use			SEC Standard *16) (Semicon, SDC)	-	
		Skin contact parts *1)	Fiber *18)	5ppm	Nov.2020		ISO 10580		EU REACH

Susbtance		Application		Threshold	Implement	Test Equip'	Test Method	Example of use	Regulation
Cooper		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)	50ppm	Mar.2020	AAS ICP	ISO 17075/17072 ISO 105-E04 etc	-	Samsung Voluntarily Reduction
Allergenic dyestuffs Carcinogenic dyestuffs		Skin contact parts of Wearables *4)	Fiber *18) Natural leather Polymer *5)	50ppm	Mar.2020	LC/MS	DIN 54231	-	Samsung Voluntarily Reduction EU REACH
OPP		Skin contact parts of Wearables *4)	Fiber *18)	100ppm	Sep.2015	LC/MS/MS	ISO 13365 ISO 17070	preservative etc	Samsung Voluntarily Reduction
			Natural leather	750ppm					
CMC/CMK				300ppm					
TCMTB		Skin contact parts of Wearables *4)	Natural leather	500ppm	Sep.2015	LC/MS/MS	ISO 13365 ISO 17070	preservative etc	Samsung Voluntarily Reduction
OIT				100ppm					
Chlorinated benzenes		Skin contact parts *1)	Fiber *18)	1ppm	Nov.2020	GC/MS	ISO 10580	Textile etc	EU REACH
Sovent residues				3000ppm					
Other arylamines				30ppm			ISO 14362		
Quinoline				50ppm		GC/MS	Extraction with Toluene		
POPs	HCBD, PCDD, PCDF, HCB Pentachlorobenzene	All parts		No intentional use	Apr.2004	GC/MS etc.	-	-	POPs

*1) Parts are under normal or reasonably foreseeable conditions of use, come into contact with human skin to an extent similar to clothing

2) Parts are intended for consumer products designed or intended by the manufacturer for use by children 12 years or younger

3) RoHS exemptions do not apply for such skin contact parts.

4) Wearable : Products intended to be in direct contact with skin for prolonged periods (e.g. watch, headset, goggle etc). The parts subject to fiber, leather and polymer materials that are contact with skin.

5) Polymer under wearable : Synthetic leather, plastic, rubber, silicon etc.

6) All sorts of PDBEs including Deca-BDE are banned.

7) Moblie : Mobiles phones, tablets, wearables including accessories.

8) AI & IoT : AI Speaker, Internet of things, Wireless router etc

9) Refers to the synthetic resin products defined in Korea Electrical Appliances and Household Safety Management Act. (e.g. Mobile phone/Tablet case, Ear phone, Bidget)

10) Products for the U.S. Market are considered in compliance with this standard provided they meet the formaldehyde threshold limit set under 'TSCA' (Excl. composite woods for packaging, ex. pallets)

11) Below 0.88㎍-Ni/㎠-week are acceptable according to EN 1811:2011+A1:2015. Nickel management is carried out based on analysis report. (Refer to e-CIMS or Approval sheet)

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

13) Implantable medical devices are excluded.

14) This don't apply to non-consumer products.

15) SDC : Samsung Display Co., Ltd.

16) Primary verification: During parts approval process, confirm the absence of benzene with MSDS, Self-Checksheets, Secondary verification (substances contained): precise analysis through third party institution

17) Applies only to newly developed models after the implement date.

18) Fibers include natural and synthetic fibers

2) RoHS Substances

Substances regulated by the EU RoHS Directive are the 10 items listed below and should confirm the precise analysis data accodrding to Art. 5.

i. Cadmium and its compounds ii. Lead and its compounds iii. Mercury and its compounds iv. Hexavalent chromium and its compounds

v. PBBs vi. PBDEs vii. BBP viii. DBP ix. DEHP x. DIBP

3) Potentially Risk Substances

Substance lists below are expected to be regulated in the future. Thus, if a substances contains over threshold, it needs to be monitored.

Substances	Application	Remarks
Radioactive Substances	All parts	-
MCCPs (Medium Chain Chlorinated Paraffins)		-
Indium Phosphide		-
Cobalt dichloride and Cobalt sulphate		-
Triclosan		-
PFRs (Triphenyl phosphate)		-
EU REACH SVHC candidate list *1)		http://echa.europa.eu/web/guest/candidate-list-table
EU REACH restricted substances		https://echa.europa.eu/substances-restricted-under-reach
EU REACH authorised substances		https://echa.europa.eu/authorisation-list
POPs		http://chm.pops.int/TheConvention/ThePOPs/AllPOPs/tabid/2509/Default.aspx
Endocrine Disruptors		-
Br·Cl·P Compounds	Plastic, PCB	Sweden chemical tax*2)

*1) Substances in EU REACH SVHC Candidate list are updated twice a year, refer to the latest list in ECHA site

※ 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) According to the target deduction rate, Substances in plastic(more than 25g) and PCB parts should be prohibited by the company.

- Tax 50% deduction : Article should contains addictive Br·Cl Compounds below than 0.1% by weight

Tax 90% deduction : Article should contains addictive Br·Cl·P Compounds & Reactive Br·Cl Compounds below than 0.1% by weight

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

1. Definition of Packaging Materials
   Packaging material means the materials deilvered to customer and are used for the storage, protection, handling and transport of products.

2. Standard for Control of Substances in Packaging Materials
   - Regulation : European Parliament and Council Directive 94/62/EC
   - ppm = mg/kg by weight (packaging weight)
   - Article 9 shall always apply to packaging materials, representing Samsungs own internal standard.
   - Details of specific substances and any permitted exemptions are presented in Appendix 2 & 3.

Substances	Application	Threshold	Implement
Cd, Pb, Hg and Cr+6	All packaging materials	80ppm total	May.2004
ODS (Ozone depleting substances)		No intentional use	May.2004
PVC		No intentional use	May.2004
Brominated flame retardants		Br 900ppm	Feb.2005
Cobalt dichloride	Desiccant (Silica gel), Humidity Indicator	No intentional use	Jun.2011

Article 8 (Standard for Control of Substances in Batteries)

1. Definition of batteries
   Battery means a unit product that is a battery cell or combines a cell and a package

2. Standard for Control of Substances in Batteries
   - Regulation : EU Battery Directive 2006/66/EC
   - ppm = mg/kg by weight in battery
   - Article 9 shall always apply to batteries, representing Samsungs own internal standard.
   - Details of specific substances and any permitted exemptions are presented in Appendix 2 & 3.

Substances	Application	Threshold	Implement
Cd	Batteries and accumulators	10ppm	May.2004
Pb		40ppm	
Hg		1ppm	

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

1. Definition of Biocide

Only biocidal substances approved or regulated by a regulated country can be manufactured, imported, sold and distributed.

* Biocidal substance : A chemical substance or microorganism intended to destroy, render harmless or exert a controlling effect on any harmful organism. (PHMG,PGH,CMIT/MIT,OIT and etc.)

Biocidal product : Mixtures and preparations of chemical products making use of a biocidal substance (Disinfectant, pesticide, preservative, etc.) products (Antibacterial air filter, antibacterial brush, etc)

Treated articles : Products (typically articles) which have been treated with, or intentionally incorporating one or more biocidal

Harmful organism : organism, including pathogenic agents, has an unwanted presence or a detrimental effect on humans, animals or 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, MWO silver ceramic etc.)

・Marketing : The product is marketed as having biocidal claims. (SPI function, UV Catalyst, Electrolysis device and etc.)

- Effective date : October 1, 2016

- Check EU ECHA, US EPA, Korea MoE, Canada PMRA 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 MoE : http://me.go.kr/home/web/index.do?menuId=71 (refer to Korea MoE's standards)

・Canada PMRA : https://pesticide-registry.canada.ca/en/active-ingredient-search.html

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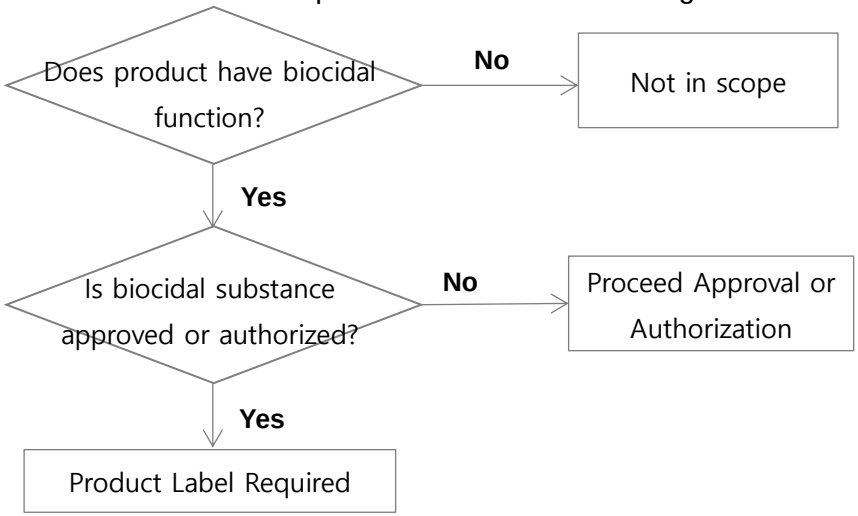


* When antimicrobial claims appeal, statement of substance use, substance name and handling precaution should be labelled on the product.

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.

Article 10 (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

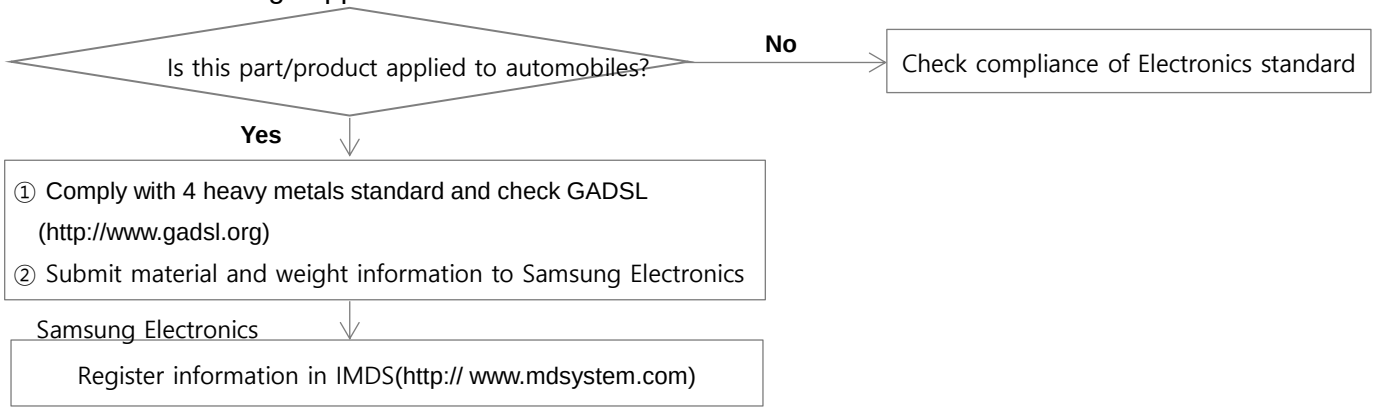
- Scope : Parts and materials used in automobiles;
  - · All parts and materials used cars intended for less than 9 passenger cars, in addition to RVs and trucks under 3.5ton
  - ※ For automotive Electronics installed at the discretion of the consumer post sale are applied to Article 9.

- 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.mdsystem.com)

<Process for checking supplier's Automotive Electronics >



 # Appendix 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.

* Eco-Partner : Ecology + Economy

2. Scope

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

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

3. Criteria for certification

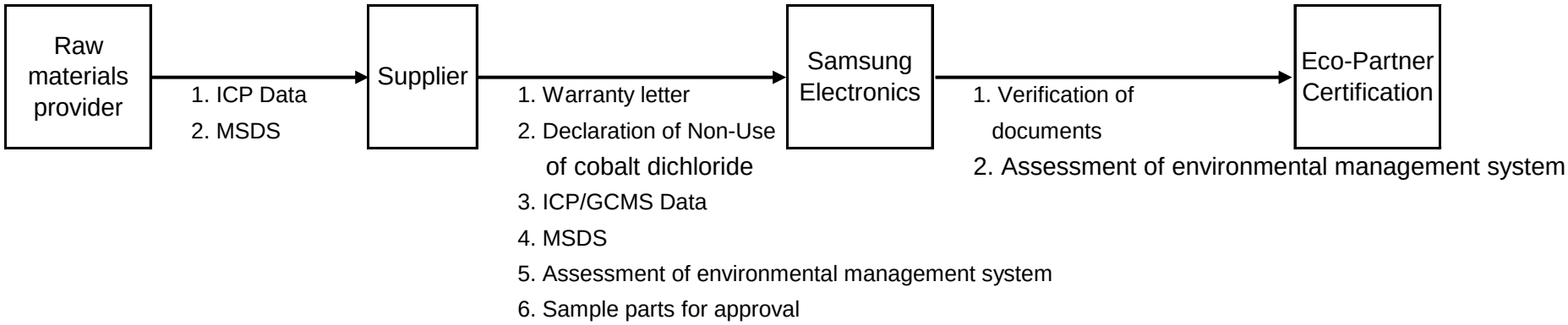
Compliance with Standards for control of substances used in products (0QA-2049) and the supplier's environmental management systems, will be assessed.

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

2) Process for certification



* Warranty letter : Letter which confirms the information submitted to SEC is accurate. Effective period is then 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.

Appendix 2 : Exemptions list

1) RoHS Substances exemption list (Exemptions are based on Annex of EU RoHS Directive)

* Product categories : Refer to EU RoHS Directive Annex I; 1(Large household appliances), 2(Small household appliances), 3(IT and telecommunications equipment), 4(Consumer equ
5(Lighting equipment), 6(Electrical & electronic tools), 7(Toys, leisure & sports equipment), 8(Medical devices), 9(Monitoring & control instruments), 10(Automatic dispensers), 11(Oth
* Exemption title "IV" indicated to EU RoHS Directive Annex IV.

Exemption		Applicable to categories	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 diameter ≤17 mm~~	~~-~~	~~2011.12.31~~
	For general lighting purposes with circular or square structural shape and tube diameter ≤17 mm : 7mg	-	-
1(f)	For special purposes: 5mg	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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): 5m~~	~~-~~	~~2011.12.31~~
	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3mg	-	-

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

Exemption		Applicable to categories	End
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
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	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		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	-	-

Exemption		Applicable to categories	End
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	-	-
4(d)	~~Mercury in High Pressure Mercury (vapour) lamps (HPMV)~~	~~1~7, 10~~	~~2015.4.13~~
		~~8 (other than in vitro),~~	
		~~9 (other than industrial)~~	
4(e)	Mercury in metal halide lamps (MH)	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
4(g)	~~Hand crafted Luminous Discharge Tubes (HLDT) used for signs, decorative or architectural and specialist light~~	-	~~2018.12.31~~
5(a)	Lead in glass of cathode ray tubes	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21

Exemption		Applicable to categories	End
		9 (industrial), 11	2024.7.21
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2 % by weight	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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	~~1~7, 10~~	~~2019.6.30~~
		8 (other than in vitro),	-
		9 (other than industrial)	
		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	-	-
6(b)	Lead as an alloying element in aluminium containing up to 0.4 % lead by weight	~~1~7, 10~~	~~2019.6.30~~
		8 (other than in vitro),	-
		9 (other than industrial)	
		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-	-	-
6(b)-Ⅱ	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight	-	-
6(c)	Copper alloy containing up to 4 % lead by weight	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	-
		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)	1~7, 10	-
		8 (other than in vitro),	2021.7.21

Exemption		Applicable to categories	End
		9 (other than industrial)	
		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	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	-
		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	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	-
		9 (industrial), 11	2024.7.21
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	1~7, 10	2021.7.21
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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 (other than in vitro),	-
		9 (other than industrial)	

Exemption		Applicable to categories	End
		8 (in vitro)	-
		9 (industrial), 11	2024.7.21
8(b)-I	Cadmium and its compounds in electrical contacts used in: - circuit breakers; - thermal sensing controls; - thermal motor protectors (excluding hermetic thermal motor protectors); - AC switches rated at: . 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	1~7, 10	-
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	1~7, 10	-
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
9(a)-I	Up to 0,75% hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators (including minibars) designed to operate fully or partly with electrical heater, having an average utilised power input < 75 W at constant running conditions	1～7, 10	2021.3.5
9(a)-II	Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators: - designed to operate fully or partly with electrical heater, having an average utilised power input ≥ 75 W at constant running conditions, - designed to fully operate with non-electrical heater.	1～7, 10	-
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	~~1~7, 10~~	~~2018.7.5~~
		8 (other than in vitro),	2021.7.21

Exemption		Applicable to categories	End
		9 (other than industrial)	
		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~~
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	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		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	~~1~7, 10~~	~~2018.7.5~~
		8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	-
		9 (industrial), 11	-
13(b)-I	Lead in ion coloured optical filter glass types	1~7, 10	-
13(b)-Ⅱ	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	1~7, 10	-
13(b)-Ⅲ	Cadmium and lead in glazes used for reflectance standards	1~7, 10	-
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	1~7, 10	2020.2.29
		8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	-

Exemption		Applicable to categories	End
		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:	1~7, 10	-
	- a semiconductor technology node of 90 nm or larger		
	- a single die of 300 mm2 or larger in any semiconductor technology node;		
	- stacked die packages with die of 300 mm2 or larger, or silicon interposers of 300 mm2 or larger		
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	1~7, 10	2016.7.21
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
18(a)	~~Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) 2 MgSi 2 O 7 :Pb)~~	-	~~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 (BaSi 2 O 5 :Pb)	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		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	-
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 Crysta~~	-	~~2011.6.1~~
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	1~7, 10	2020.2.29
		8 (other than in vitro),	2021.7.21

Exemption		Applicable to categories	End
		9 (other than industrial)	
		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	1~7, 10	2021.7.21
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	1~7, 10	2021.7.21
21(c)	Lead in printing inks for the application of enamels on other than borosilicate glasses	1~7, 10	2021.7.21
23	~~Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less~~	-	~~2010.9.24~~
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	1~7, 10	2021.7.21
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
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 acoust~~	-	~~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)	1~7, 10	2021.7.21
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	-
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	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21

Exemption		Applicable to categories	End
	of 100 dB (A) and more	9 (other than industrial)	
		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)	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		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	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
34	Lead in cermet-based trimmer potentiometer elements	1~7, 10	-
		8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	-
		9 (industrial), 11	2024.7.21
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	1~7, 10	2021.7.21
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	

Exemption		Applicable to categories	End
		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	~~1~7, 10~~	~~2016.7.21~~
		8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial), 11	2024.7.21
39	~~Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for~~	~~-~~	~~2018.11.20~~
39(a)	Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in displ	-	-
	use in solid state illumination or display systems		
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	1~7, 10, 11	-
	printed circuit boards used in ignition modules and other electrical and electronic engine control	8 (other than in vitro),	2021.7.21
	systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder	9 (other than industrial)	
	of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European	8 (in vitro)	2023.7.21
	Parliament and of the Council	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
43	Bis(2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed: (a) 30 % by weight of the rubber for (i) gasket coatings; (ii) solid-rubber gaskets; or (iii) rubber components included in assemblies of at least three components using electrical,	11	2024.7.21

Exemption		Applicable to categories	End
	mechanical or hydraulic energy to do work, and attached to the engine. (b) 10 % by weight of the rubber for rubber-containing components not referred to in point (a). For the purposes of this entry, “prolonged contact with human skin” means continuous contact of more than 10 minutes duration or intermittent contact over a period of 30 minutes, per day.		
44	Lead in solder of sensors, actuators, and engine control units of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council (*), installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users	11	2024.7.21
Equipment utilizing or detecting ionizing radiation			
IV-1	Lead, cadimium and mercury in detectors for ionising radiation.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-2	Lead bearings in X-ray tubes.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21

Exemption		Applicable to categories	End
IV-5	Lead in shielding for ionising radiation.	8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	-
IV-6	Lead in X-ray test objects.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-7	Lead stearate X-ray diffraction crystals.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
Sensors, detectors and electrodes			
IV-1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	-
IV-1b	Lead anodes in electrochemical oxygen sensors.	8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	-
IV-1c	Lead, cadmium and mercury in infra-red light detectors.	8 (other than in vitro),	-
		9 (other than industrial)	

Exemption		Applicable to categories	End
		8 (in vitro)	-
		9 (industrial)	-
IV-1d	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
Others			
IV-9	Cadmium in helium-cadmium lasers.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-10	Lead and cadmium in atomic absorption spectroscopy lamps.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		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 (other than in vitro),	-
		9 (other than industrial)	
		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 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	-
IV-13	Lead in counterweights	8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21

Exemption		Applicable to categories	End
IV-14	Lead in single crystal piezoelectric materials for ultrasonic transducers.	8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-15	Lead in solders for bonding to ultrasonic transducers.	8 (other than in vitro),	-
		9 (other than industrial)	
		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	8 (other than in vitro),	2021.7.21
	RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or r	9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-17	Lead in solders in portable emergency defibrillators.	8 (other than in vitro),	-
		9 (other than industrial)	
		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 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-19	Lead in Liquid crystal on silicon (LCoS) displays.	8 (other than in vitro),	2021.7.21
		9 (other than industrial)	
		8 (in vitro)	2023.7.21
		9 (industrial)	2024.7.21
IV-20	Cadmium in X-ray measurement filters.	8 (other than in vitro),	-
		9 (other than industrial)	
		8 (in vitro)	2023.7.21

Exemption		Applicable to categories	End
		9 (industrial)	2024.7.21
IV-21	~~Cadmium in phosphor coatings in image intensifiers for X-ray imagesX-ray until 31 December 2019 and in spare parts forX-ray systems placed on the EU marketbefore 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 radiatio	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 operat (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	-
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	-
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-coole and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	8, 9	-

Exemption		Applicable to categories	End
IV-30	~~Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers * spare parts for X-ray systems placed on the EU market before 1 January 2020.~~	~~8, 9~~	~~2019.12.31~~
IV-31	~~Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices placed on th 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 device 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 (other than in vitro), 9 (other than 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-33Ⅱa	~~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-33Ⅱb	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 instru	9 (industrial)	2020.12.31
IV-37	Lead in platinized platinum electrodes used for conductivity measurements where at least one of the followir (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;	8, 9	-

Exemption		Applicable to categories	End
	(iii) corrosive solutions containing halogen gas; (c) measurements of conductivities above 100 mS/m that must be performed with portable instruments		
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 pres (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;	8 (other than in vitro), 9 (other than industrial)	-
	(d) a sample detection area larger than 314 mm 2 for detecting electrons or ions;	8 (in vitro)	-
	(e) a multiplication factor larger than 4,0 × 10 7"	9 (industrial)	-
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 (other than in vitro), 9 (other than 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

2) Exemption list out of RoHS Substances

Exemption		Applicable to categories	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)	-	-
AT-1	~~Added in ceramics for certain electronic components~~	~~Mobile phones~~	~~2012.1.31~~
AT-2	~~Used as a catalyst in polymeric materials for certain electronic components~~	~~Mobile phones~~	~~2012.1.31~~
AT-3	Additives in optical glass for preventing air bubbles and removing impurities.	-	-
AT-4	Resistive layer inside resistor chip and varistor for technical reason	-	-
AT-5	Antimony in high melting temperature type solders	-	-
AT-6	Additives for thermal conduction on N type semiconductor(Bi2(Te, Se3) and P type semiconductor((Bi, Sb)2 Te3) Used in Thermal Electronic devices	-	-
BE-1	Beryllium alloy used in connectors and certain electronic components	-	-
P-1	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) (a) No lead, cadmium, mercury or hexavalent chromium shall be intentionally introduced during the manufacturing process (b) The packaging material may only exceed the concentration limits because of the addition of recycled materials	Packaging	-

Appendix 3 : Examples of substances and its compounds

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	-

Lead and its compounds (1/3)	
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 and its compounds (2/3)	
Substance name	CAS No
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

Lead and its compounds (3/3)	
Substance name	CAS No
Silicic acid (H2Si2O5), 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	-

Mercury and its compounds (1/2)	
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 and its compounds (2/2)	
Substance name	CAS No
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	-

Hexavalent chromium and its compounds (1/2)	
Substance name	CAS No
Chromium trioxide	1333-82-0
Lithium chromate	14307-35-8
Sodium chromate	7775-11-03
Potassium chromate	7789-00-6
Patassium chlorochromate	16037-50-6
Ammonium chromate	7788-98-9
Copper chromate	13548-42-0
Magnesium chromate	13423-61-5

Hexavalent chromium and its compounds (2/2)	
Substance name	CAS No
Calcium chromate	13765-19-0
Strontium chromate	7789-06-02
Barium Chromate	10294-40-3
Lead chromate(orange)	1344-38-3
Dichromium zinc tetraoxide	12018-19-8
Zinc chromate	13530-65-9
Zinc dichromate	14018-95-2
Sodium dichromate	10588-01-9
Sodium dichromate dihydrate	7789-12-0
Ammonium dichromate	7789-09-05
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	-

Polybrominated biphenyls (PBBs) (1/2)	
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

Polybrominated biphenyls (PBBs) (2/2)	
Substance name	CAS No
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
Pentabrphenyl	56307-79-0
Tribromobiphenyl	59080-34-1
Octabromobiphenyl	61288-13-9
Other PBBs compounds	-

Polybrominated diphenylethers (PBDEs)	
Substance name	CAS No
4-BROMODIPHENYL ETHER (PBDE)	101-55-3
Bis(pentabromophenyl) ether (decabromodiphenyl ether) (Dec	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	-

Phthalate	
Substance name	CAS No
BBP (Benzyl butyl phthalate)	85-68-7
DBP (Dibutyl phthalate)	84-74-2
DEHP (Bis (2-ethylhexyl)phthalate)	117-81-7
DIBP (Diisobutyl phthalate)	84-69-5
DINP (Diisononyl phthalate)	68515-48-0 28553-12-0
DIDP (Di-isodecyl phthalate)	68515-49-1 26761-40-0
DnOP (Di-n-octyl phthalate)	117-84-0
DnHP (Di-n-hexyl phthalate)	84-75-3
DMEP (Bis(2-methoxyethyl) phthalate)	117-82-8
DIPP (Di-iso-pentyl phthalate)	605-50-5
nPIPP (n-Pentyl-isopentyl phthalate)	776297-69-9
DnPP (Di-n-pentyl phthalate)	131-18-0
DCHP (Dicyclohexyl phthalate)	84-61-7
DEP (Diethyl phthalate)	84-66-2
DMP (Dimethyl phthalate)	131-11-3
DIHP (1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich)	71888-89-6
DHNUP (1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters)	68515-42-4
DPP (1,2-Benzenedicarboxylic acid, dipentylester, branched and linear)	84777-06-0
DPHP (Dipropyl Heptyl Phthalate)	53306-54-0

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

Ozone layer depleting substances(ODS) (1/5)	
Substance name	CAS No
CFC-11 (CFCl3)	75-69-4
CFC-12 (CF2Cl2)	75-71-8
CFC-113 (C2F3Cl3)	76-13-1

Ozone layer depleting substances(ODS) (2/5)	
Substance name	CAS No
CFC-114 (C2F4Cl2)	1320-37-2
CFC-115 (C2F5Cl)	76-15-3
CFC-13 (CF3Cl)	75-72-9
CFC-111 (C2FCl5)	354-56-3
CFC-112 (C2F2Cl4)	28605-74-5
CFC-211 (C3FCl7)	135401-87-5
CFC-212 (C3F2Cl6)	3182-26-1
CFC-213 (C3F3Cl5)	2354-06-05
CFC-214 (C3F4Cl4)	2268-46-4
CFC-215 (C3F5Cl3)	1652-81-9
CFC-216 (C3F6Cl2)	661-97-2
CFC-217 (C3F7Cl)	422-86-6
Halon-1211 (CF2BrCl)	353-59-3
Halon-1301 (CF3Br)	75-63-8
Halon-2402 (C2F4Br2)	124-73-2
Carbon tetrachloride (CCl4)	56-23-5
Methylchloroform (C2H3Cl3)	71-55-6
Methyl bromide (CH3Br)	-
HBFC-21B2 (CHFBr2)	1868-53-7
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)	-

Ozone layer depleting substances(ODS) (3/5)	
Substance name	CAS No
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

Ozone layer depleting substances(ODS) (4/5)	
Substance name	CAS No
HCFC-21 (CHFCl2)	75-43-4
HCFC-22 (CHF2Cl)	75-45-6
HCFC-31 (CH2FCl)	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
HCFC-151 (C2H4FCl)	1615-75-4
HCFC-221 (C3HFCl6)	134237-35-7
HCFC-222 (C3HF2Cl5)	134237-36-8
HCFC-223 (C3HF3Cl4)	134237-37-9
HCFC-224 (C3HF4Cl3)	134237-38-0
HCFC-225 (C3HF5Cl2)	128903-21-9
HCFC-225ca (CF3CF2CHCl2)	422-56-0
HCFC-225cb (CF2ClCF2CHClF)	507-55-1
HCFC-226 (C3HF6Cl)	134308-72-8
HCFC-231 (C3H2FCl5)	134190-48-0
HCFC-232 (C3H2F2Cl4)	134237-39-1
HCFC-233 (C3H2F3Cl3)	134237-40-4

Ozone layer depleting substances(ODS) (5/5)	
Substance name	CAS No
HCFC-234 (C3H2F4Cl2)	127564-83-4
HCFC-235 (C3H2F5Cl)	134237-41-5
HCFC-241 (C3H3FCl4)	134190-49-1
HCFC-242 (C3H3F2Cl3)	134237-42-6
HCFC-243 (C3H3F3Cl2)	134237-43-7
HCFC-244 (C3H3F4Cl)	134190-50-4
HCFC-251 (C3H4FCl3)	134190-51-5
HCFC-252 (C3H4F2Cl2)	134190-52-6
HCFC-253 (C3H4F3Cl)	134237-44-8
HCFC-261 (C3H5FCl2)	134237-45-9
HCFC-262 (C3H5F2Cl)	134190-53-7
HCFC-271 (C3H6FCl)	134190-54-8
Bromochloromethane (CH2BrCl)	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 (CH3Cl)	74-87-3
Other Ozone depleting substances and its compounds	-

Greenhouse Gas(GHG) (1/2)	
Substance name	CAS No
Carbon tetrafluoride (Perfluoromethane)	75-73-0
Perfluoroethane (Hexafluoroethane)	76-16-4
Perfluoropropane (Octafluoroproane)	76-19-7

Greenhouse Gas(GHG) (2/2)	
Substance name	CAS No
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)	1975-10-05
HFC-41 (CH3F)	593-53-3
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	-

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	-

Formaldehydes	
Substance name	CAS No
Formaldehyde	50-00-0
Formaldehyde, reaction products with Butylphenol	91673-30-2
Formaldehyde, Polymer with Bromophenol and (Chloromethyl)	68541-56-0
Formaldehyde, oligomeric reaction products with aniline	25214-70-4
Other Formaldehydes and its compounds	-

Short-chain chlorinated paraffins (SCCPs) (1/2)	
Substance name	CAS No
ALKANES, C10-12, CHLORO	108171-26-2
Alkanes, C10-13, chloro	85535-84-8
ALKANES, C10-14, CHLORO	85681-73-8
ALKANES, C10-21, CHLORO	84082-38-2
ALKANES, C10-26, CHLORO	97659-46-6

Short-chain chlorinated paraffins (SCCPs) (2/2)	
Substance name	CAS No
ALKANES, C10-32, CHLORO	84776-06-7
ALKANES, C12-13, CHLORO	71011-12-6
ALKANES, C12-14, CHLORO	85536-22-7
ALKANES, C6-18, CHLORO	68920-70-7
ALKANES, CHLORO	61788-76-9
Other Alkane 10-13 Carbon chain and its compounds	-

Azo colorants (1/2)	
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-dimethlbenzidine	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

Azo colorants (2/2)	
Substance name	CAS No
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-xylidine	95-68-1
2,6-xylidine	87-62-7
4,4'-oxydianiline and its salts	-
Other Azo and its compounds	-

Nickel and its compounds	
Substance name	CAS No
Nickel	7440-02-0
Nickel(II)oxide	1313-99-1
Nickel Sulfate	7786-81-4
Nickel Sulfammate 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
Tetracarbonylnickel	13463-39-3
Nickel di(acetate)	373-02-4
Other Nickel and its compounds	-

Organic tin compounds (TBT/TPT/DOT) (1/2)	
Substance name	CAS No
Tributyltin (TBT)	56573-85-4
Triphenyltin (TPT)	668-34-8
Bis(tributyltin)oxide (TBTO)	56-35-9
Coplymer of alkyl(c=8) acrylate,methyl methacrylate and tributyltin methacrylate	67772-01-4
Methyl Methacrylate and tributyl tin methacrylate	26354-18-7
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	1983-10-04
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

Organic tin compounds (TBT/TPT/DOT) (2/2)	
Substance name	CAS No
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	-
Dioctyl tin (DOT)	15231-44-4
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stann	15571-58-1
Dioctyltin bis(isooctyl maleate) (DOT)	33568-99-9
Dioctyltin dichloride (DOT)	3542-36-7
Dioctyltin dilaurate (DOT)	3648-18-8
Dioctyltin maleate (DOT)	16091-18-2
Dioctyltin oxide (DOT)	870-08-6
Dioctyltin (DOT) compounds	-

Organic tin compounds (DBT) (1/2)	
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

Organic tin compounds (DBT) (2/2)	
Substance name	CAS No
Dibutytin di(2-ethylhexyl maleate)	15546-12-0
Di-n-butyltin di(monobutyl)maleate	15546-16-4
Bis (acetato) dibutyltin	17523-06-7
Dibutyltin dihexanoate	19704-60-0
Dibutyltin S,S'-bis (isooctyl mercaptoacetate)	26636-01-1
Dibutyltin bis(octylthioglycolate)	2781-09-01
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	78-04-06
Dibutyltin mercaptopropionate	78-06-08
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	-

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
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	-

Perfluorooctane Sulfonates (PFOS) (1/2)	
Substance name	CAS No
Perfluoroctane Sulfonates (PFOS) C8F17SO2X, where	-
X = OR, NR or other derivative	
Perfluorooctane sulfonic acid and its salts	1763-23-1
Perfluorooctane sulfonyl fluoride	307-35-7
Heptadecafluorooctanesulphonic acid, compound with	70225-14-8
2,2'-iminodiethanol (1:1)	

Perfluorooctane Sulfonates (PFOS) (2/2)	
Substance name	CAS No
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)octane sulphonamide	1691-99-2

DMF	
Substance name	CAS No
Biocide dimethylfumarate	624-49-7

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

TeCP, TriCP	
Substance name	CAS No
2,3,5,6-Tetrachlorophenol	935-95-5
2,3,4,6-Tetrachlorophenol	58-90-2
2,3,4,5-Tetrachlorophenol	4901-51-3
2,3,4-Trichlorophonol	15950-66-0
2,3,5-Trichlorophonol	933-78-8
2,3,6-Trichlorophonol	933-75-5
2,4,5-Trichlorophonol	95-95-4
2,4,6-Trichlorophonol	88-06-02
3,4,5-Trichlorophonol	609-19-8
2,3-Dichlorophenol	576-24-9
2,4-Dichlorophenol	120-83-2
2,5-Dichlorophenol	583-78-8
2,6-Dichlorophenol	87-65-0
3,4-Dichlorophenol	95-77-2
3,5-Dichlorophenol	591-35-5
2-Chlorophenol	95-57-8
3-Chlorophenol	108-43-0
4-Chlorophenol	106-48-9

Phenol	
Substance name	CAS No
Phenol	108-95-2

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	-

PAHs (1/2)		
Substance name		CAS No
∑8	Benzo[a]pyrene (BaP)	50-32-8
	Dibenzo[a,h]anthracene (DBAhA)	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
∑24	Acenaphthene	83-32-9
	Acenaphthylene	208-96-8
	Anthracene	120-12-7
	Benzo[a]anthracene (BaA)	56-55-3
	Benzo[a]pyrene (BaP)	50-32-8

PAHs (2/2)		
Substance name		CAS No
∑24	Benzo[b]fluoranthene (BbFA)	205-99-2
	Benzo[e]pyrene (BeP)	192-97-2
	Benzo[ghi]perylene	191-24-2
	Benzo[j]fluoranthene (BjFA)	205-82-3
	Benzo[k]fluoranthene (BkFA)	207-08-9
	Chrysen (CHR)	218-01-9
	Cyclopenta[c,d]pyrene	27208-37-3
	Dibenzo[a,h]anthracene (DBAhA)	53-70-3
	Dibenzo[a,e]pyrene	192-65-4
	Dibenzo[a,h]pyrene	189-64-0
	Dibenzo[a,i]pyrene	189-55-9
	Dibenzo[a,l]pyrene	191-30-0
	Fluoranthene	206-44-0
	Fluorene	86-73-7
	Indeno[1,2,3-cd]pyrene	193-39-5
	1-Methylpyrene	2381-21-7
	Naphthalene	91-20-3
	Phenanthrene	85-01-08
	Pyrene	129-00-0

Bisphenol A	
Substance name	CAS No
Bisphenol A	80-05-07

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-hexabromocyclodecane	3194-55-6
Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified:	-

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

Alkylphenol, Alkylphenol Ethoxylates	
Substance name	CAS No
n-Nonylphenol	25154-52-3
tert-Octylphenol	27193-28-8
Nonylphenol ethoxylate	9016-45-9
Octylphenol ethoxylate	9036-19-5

4-tert-Butylphenol	
Substance name	CAS No
4-tert-Butylphenol	98-54-4

TCEP, TDCPP	
Substance name	CAS No
Tris(2-chloroethyl) phosphate(TCEP)	115-96-8
Tris(1,3-dichloro-2-propyl) phosphate(TDCPP)	13674-87-8

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

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

Brominated Flame Retardants and its compounds (1/2)	
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

Brominated Flame Retardants and its compounds (2/2)	
Substance name	CAS No
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	68928-70-1
TBBA-polycarbonate	156042-31-8
Other Brominated Flame Retardants	-

Chlorinated Flame Retardants	
Substance name	CAS No
BROMODICHLOROMETHANE	75-27-4
CHLORENDIC ANHYDRIDE	115-27-5
CHLORINATED PARAFFINS	63449-39-8
TETRACHLOROPHTHALIC ANHYDRIDE(TCPA)	117-08-8
DICHLOROMETHANE	75-09-02
PHOSPHORUS TRICHLORIDE	7719-12-02
TRICHLOROETHYLENE	79-01-06
TRIS(2-CHLOROETHYL)PHOSPHATE	115-96-8
TRIS(CHLOROETHYL) PHOSPHATE	29716-44-7
ZINC CHLORIDE	7646-85-7

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
Polyvinylimidazolinium Chloride(PVC)	81517-61-5
Other PVC compounds	-

Antimony and compounds (1/2)	
Substance name	CAS No
Antimony Trioxide	1309-64-4
Antimony trisulfide	1345-04-6
Antimony trichloride	10025-91-9

Antimony and compounds (2/2)	
Substance name	CAS No
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	-

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

Beryllium and compounds (1/2)	
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 and compounds (2/2)	
Substance name	CAS No
Beryllium nitrate	13597-99-4
Beryllium phosphate	13598-15-7
Beryllium sulfate	13510-49-1
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	-

Cobalt dichloride	
Substance name	CAS No
Cobalt dichloride	7646-79-9
Cobalt	7440-48-4

Volatile Organic Compounds (VoCs) (1/2)	
Substance name	CAS No
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

Volatile Organic Compounds (VoCs) (2/2)	
Substance name	CAS No
o -Xylene	95-47-6
Other Volatile Organic Compounds	-

Copper	
Substance name	CAS No
Copper	7440-50-8

Allergenic dyestuffs (1/2)	
Substance name	CAS No
C.I. Disperse Blue 1	2475-45-8
C.I. Disperse Blue 3	2475-46-9
C.I. Disperse Blue 7	3179-90-6
C.I. Disperse Blue 26	3860-63-7
C.I. Disperse Blue 35	12222-75-2
C.I. Disperse Blue 102	12222-97-8
C.I. Disperse Blue 106	12223-01-7
C.I. Disperse Blue 124	61951-51-7
C.I. Disperse Brown 1	23355-64-8
C.I. Disperse Orange 1	2581-69-3
C.I. Disperse Orange 3	730-40-5
C.I. Disperse Orange 37	12223-33-5
C.I. Disperse Orange 76	13301-61-6
C.I. Disperse Red 1	2872-52-8
C.I. Disperse Red 11	2872-48-2

Allergenic dyestuffs (2/2)	
Substance name	CAS No
C.I. Disperse Red 17	3179-89-3
C.I. Disperse Yellow 1	119-15-3
C.I. Disperse Yellow 3	2832-40-8
C.I. Disperse Yellow 9	6373-73-5
C.I. Disperse Yellow 39	12236-29-2
C.I. Disperse Yellow 49	54824-37-2

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

Carcinogenic dyestuffs (2/2)	
Substance name	CAS No
C.I. Basic Violet 14	548-62-9

OPP, CMC/CMK, TCMTB, OIT	
Substance name	CAS No
2-Phenylphenol (OPP)	90-43-7
4-Chlro-3-methylphenol (CMC/CMK)	59-50-7
2-(Thiocyanomethylthio)benzothiazol (TCMTB)	21564-17-0
2-octylisothiazol-3(2H)-on (OIT)	26530-20-1

Chlorinated benzenes	
Substance name	CAS No
α,α,α,4-tetrachlorotoluene; p-Chlorobenzotrichloride	5216-25-1
α,α,α-trichlorotoluene; benzotrichloride	98-07-7
α-chlorotoluene; benzyl chloride	100-44-7

Sovent residues	
Substance name	CAS No
N-methyl-2-pyrrolidone; 1- methyl-2-pyrrolidone (NMP)	872-50-4
N,N-dimethylacetamide (DMAc)	-
N,N-dimethylformamide; dimethyl formamide (DMF)	68-12-2

Other arylamines	
Substance name	CAS No
4-chloro-o-toluidinium chloride	3165-93-3
2-naphthylammonium acetate	553-00-4
4-methoxy-m-phenylenediammonium sulphate; 2,4-diaminoanisole sulphate	39156-41-7
2,4,5-trimethylaniline hydrochloride	21436-97-5

Quinoline	
Substance name	CAS No
Quinoline	91-22-5

POPs	
Substance name	CAS No
Hexachlorobutadiene(HCBD)	87-68-3
PCDD(Polychlorinated dibenzo-p-dioxins)	-
PCDF(Polychlorinated dibenzofurans)	-
PFHXs and its salts and PFHxS-related compounds	355-46-4
HCB(Hexachlorobenzene)	118-74-1
Pentachlorobenzene	608-93-5

Radioactive	
Substance name	CAS No
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	-

MCCPs, Triclosan, PFRs	
Substance name	CAS No
Medium-chain chlorinated paraffins, C14-C17	85535-85-9
Triclosan	3380-34-5
Triphenyl phosphate(TPhP)	115-86-6

Endocrine Disruptors (1/3)	
Substance name	CAS No
Butyl 4-hydroxybenzoate(Butylparaben)	94-26-8
4-tert-butylphenol	98-54-4
Tris(4-nonylphenyl, branched and linear) phosphite	-
1,7,7-trimethyl-3-(phenylmethylene)bicyclo[2.2.1] heptan-2-one	15087-24-8
Dicyclohexyl phthalate	84-61-7

Endocrine Disruptors (2/3)	
Substance name	CAS No
Reaction products of 1,3,4-thiadiazolidine-2,5-dithione,	-
formaldehyde and 4-heptylphenol, branched and linear	
4,4'-isopropylidenediphenol	80-05-7
4-heptylphenol, branched and linear	-
p-(1,1-dimethylpropyl)phenol	80-46-6
4-Nonylphenol, branched and linear, ethoxylated	-
2-[2-[2-[2-(4-nonylphenoxy)ethoxy]ethoxy]ethoxy]ethanol	7311-27-5
20-(4-nonylphenoxy)-3,6,9,12,15,18-hexaoxaicosan-1-ol	27942-27-4
4-Nonylphenol, ethoxylated	26027-38-3
Nonylphenol, branched, ethoxylated	68412-54-4
Nonylphenol, ethoxylated	9016-45-9
2-[2-(4-nonylphenoxy)ethoxy]ethanol	20427-84-3
Nonylphenol, branched, ethoxylated	68412-54-4
Nonylphenol, ethoxylated (15-EO)	-
Nonylphenol, ethoxylated (10-EO)	-
Nonylphenol, ethoxylated (8-EO)	-
Nonylphenol, ethoxylated (6,5-EO)	-
26-(4-nonylphenoxy)-3,6,9,12,15,18,21,24-	14409-72-4
Octaoxahexacosan-1-ol	
26-(nonylphenoxy)-3,6,9,12,15,18,21,24-	26571-11-9
octaoxahexacosan-1-ol	
Nonylphenolpolyglycolether	
Nonylphenol, ethoxylated (EO = 10)	
Nonylphenol, ethoxylated (EO = 4)	
4-Nonylphenol, branched, ethoxylated	127087-87-0
2-{2-[4-(3,6-dimethylheptan-3-yl)phenoxy]ethoxy}ethanol	1119449-38-5

Endocrine Disruptors (3/3)	
Substance name	CAS No
Nonylphenolpolyglykolether	9016-45-9
Isononylphenol, ethoxylated	37205-87-1
2-[4-(3,6-dimethylheptan-3-yl)phenoxy]ethanol	1119449-37-4
Nonylphenol, ethoxylated (polymer)	-
4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated	-
4-Nonylphenol, branched and linear	-
4-(3,6-dimethylheptan-3-yl)phenol	142731-63-3
p-(1,1-dimethylheptyl)phenol	30784-30-6
p-isononylphenol	26543-97-5
p-(1-methyloctyl)phenol	17404-66-9
4-(1-ethyl-1-methylhexyl)phenol	52427-13-1
p-nonylphenol	104-40-5
Phenol, 4-nonyl-, branched	84852-15-3
4-(3,5-dimethylheptan-3-yl)phenol	186825-36-5
4-(2,6-dimethylheptan-2-yl)phenol	521947-27-3
Phenol, nonyl-, branched	90481-04-2
Nonylphenol	25154-52-3
4-(3-ethylheptan-2-yl)phenol	186825-39-8
Isononylphenol	11066-49-2
4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9
Diisobutyl phthalate	84-69-5
Benzyl butyl phthalate (BBP)	85-68-7
Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7
Dibutyl phthalate (DBP)	84-74-2
Others endocrine disruptors substances	-

Additive Brominated compounds (1/2)	
Substance name	CAS No
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

Additive Brominated compounds (2/2)	
Substance name	CAS No
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
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
Tris (tri bromoneopentyl) phosphate	19186-97-1

Reactive Brominated compounds (1/2)	
Substance name	CAS No
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
Poly(2,6-dibromophenylene oxide)	69882-11-7
TBBA-TBBAdiglycidyl-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

Reactive Brominated compounds (2/2)	
Substance name	CAS No
TBBA carbonate oligomer, phenoxy end capped	94334-64-2

Additive Chlorinated compounds	
Substance name	CAS No
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	
Substance name	CAS No
Chlorinated polymers and elastomers	184963-09-5
Tetrachlorobisfenol A (TCBA)	79-95-8
Chlorinated polymers and elastomers (PVC)	9002-86-2

Additive Phosphorus compounds (1/3)	
Substance name	CAS No
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
DIPHENYL PHOSPHATE, TETRADECYL	142474-86-0
Oligomeric ethyl ethylene phosphate/Alkylphosphate Oligomer (	184538-58-7

Additive Phosphorus compounds (2/3)	
Substance name	CAS No
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
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 (TPCP)	78-32-0
t-Butylated triphenyl phosphate mixture	78-33-1
Diethylethane phosphonate (DEEP)	78-38-6

Additive Phosphorus compounds (3/3)	
Substance name	CAS No
Triethyl phosphate (TEP)	78-40-0
Tris(2-ethylhexyl) phosphate (TEHP)	78-42-2
Tris(2-butoxyethyl) phosphate (TBEP)	78-51-3
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

Reactive Phosphorus compounds	
Substance name	CAS No
Diethyl N,N bis (2-hydroxyethyl) aminomethyl phosphonate	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
Melamine Polyphosphate	56386-64-2
Bisphenol A bis-(diphenyl phosphate); BAPP	5945-33-5
Ammoniumpolyphosphate	68333-79-9
Polyphosphonate	68664-06-2
Poly[phosphonate-co-carbonate]	77226-90-5

Chlorinated compounds (1/5)	
Substance name	CAS No
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
(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-DICHLORO PHENYL)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-NAPHTALENECARBOXAMIDE, 3-HYDROXY-4-((2-METHOXY-5-((PHENYLAMINO)CARBONYL)PHENYL) AZO)-N-(2-METHOXY-5-CHLOROPHENYL)-	67990-05-0
1,4-BIS((1-(2,5-DICHLOROPHENYLAZO)-2-HYDROXY-3-NAPHTHC	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

Chlorinated compounds (2/5)	
Substance name	CAS No
4,5-DICHLORO-2-N-OCTYL-3-ISOTHIAZOLONE	64359-81-5
3-(4-CHLOROPHENYL)-1,1-DIMETHYLUREA	150-68-5
2-PYRAZOLIN-5-ONE, 4,4 -(3,3 -DICHLORO-4,4 -BIPHENYLYLENEBISAZO)-	3520-72-7
4(2-CHLOROETHYL)MORPHOLINE HYDROCHLORIDE	3647-69-6
4-CHLOROTOLUENE	106-43-4
5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE	26172-55-4
ACETIC ACID VINYL ESTER, POLYMER WITH CHLOROETHYLENE AND VINYL ALC.	25086-48-0
ANILINE HYDROCHLORIDE	142-04-1
BARIUM CHLORIDE (BACL2), DIHYDRATE	10326-27-9
BASIC PIGMENT VIOLET 23 PICCS CARBAZOLE	215247-95-3
BENZAMIDE, 2,6-DICHLORO-	2008-58-4
BENZAMIDE,-CHLORO -AZO-TRIFLUOROMETHYL	57971-97-8
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

Chlorinated compounds (3/5)	
Substance name	CAS No
ACETOACETAMIDE, 2-((4-CHLORO-2-NITROPHENYL) AZO)-N-(2-OXO-5-BENZIMIDAZOLINYL)-	12236-62-3
2-BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL) AZO)-3-HYDROXY-N-(2-METHOXYPHENYL)-	13515-40-7
BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL) AZO)-N-(2-CHLOROPHENYL)-3-OXO-	6486-23-3
C.I. PIGMENT YELLOW 55	6358-37-8
2-BUTENAMIDE, N-(4-CHLORO-2,5-DIMETHOXY PHENYL)-2-((2,5-DIMETHOXY-4-((PHENYLAMINO) SULFONYL)PHENYL)AZO)-3-HYDROXY-	12225-18-2
BUTYL 2,4-DICHLOROPHENOXYACETATE	94-80-4
C.I. PIGMENT GREEN 7	1328-53-6
C.I. PIGMENT YELLOW 83	5567-15-7
CARBONIC DICHLORIDE	75-44-5
CHLORIDE	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

Chlorinated compounds (4/5)	
Substance name	CAS No
Trisodium bis[5-chloro-3-[(4,5-dihydro-3-methyl-5-oxo-1-phenyl-1H-pyrazol-4-yl)azo]-2-hydroxybenzene sulphonato(3-)]chromate(3-)	73324-05-7
Hydrogen bis[1-[(5-chloro-2-hydroxyphenyl)azo]-2-naphtholato(2-)]chromate(1-)	31714-55-3
COBALT CHLORIDE (COCL2), 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 (NICL2)	7718-54-9
NICKEL CHLORIDE (NICL2), HEXAHYDRATE	7791-20-0

Chlorinated compounds (5/5)	
Substance name	CAS No
PARA-DICHLOROBENZENE	106-46-7
2-(2 -HYDROXY-3 -TERT-BUTYL-5 -METHYLPHENYL)-5-CHLOROB	3896-11-05
2,4-dichlorophenol	120-83-2
PHOSPHONOUS DICHLORIDE, PHENYL-	644-97-3
PHOSPHORUS OXYCHLORIDE	10025-87-3
POLYCHLOROPRENE	9010-98-4
3-(4-((2,6-DICHLORO-4-NITROPHENYL)AZO)-N-(2-HYDROXYETH	5261-31-4
PYRROLO(3,4-C)PYRROLE-1,4-DIONE COMPOUND	84632-65-5
CHLORINATED NATURAL RUBBER	9006-03-05
TRICHLOROVINYLSILICON	75-94-5
SODIUM CHLORIDE	7647-14-5
TETRACHLOROETHYLENE	127-18-4
TETRACHLORO-U-HYDROXY(U-METHACRYLATO-O:O)DICHROMI	15096-41-0
THIOSULFAN	115-29-7
TRICHLORO DI-P-XYLYLENE	29716-49-2
TRIETHYLAMINE HYDROCHLORIDE	554-68-7
VINYL CHLORIDE	75-01-04
Vinyl chloride-ethylene polymer	25037-78-9
VINYL CHLORIDE-VINYL ACETATE COPOLYMERS	9003-22-9
ETHANAMINIUM, N-(6-(DIETHYLAMINO)-9-(2-(METHOXYCARBO	39393-39-0
BENZOIC ACID, 2-(6-(ETHYLAMINO)-3-(ETHYLIMINO)-2,7-DIMET	3068-39-1

Appendix-4 : Submission format for Eco-partner certification

제품환경보증서(국문)

제 품 환 경 보 증 서

수 신 : 삼성전자 주식회사와 자회사
회사명 :_____(이하 "당사"라 함)

1. 당사는 아래사항에 대하여 보증서를 제출합니다.
 가. 당사는 환경관리물질과 관련 모든국제 환경규제를 준수할 것을 보증합니다.
 나. 당사는 지속적으로 귀사의 "제품환경관리물질운영규칙(0QA-2049)"의 개정현황을 확인하고 이를 준수할 것을 보증합니다.
 다. 당사는 귀사에 공급하는 모든 제품/부품/원재료/포장재와 관련하여 제출하는 모든 증빙서류와 데이터가 사실과 다름없음을 보증합니다.

2. 당사가 귀사에 위의 사항(1번)에서 보증한 의무의 실패로 인해 발생하는 모든 소송 또는 분쟁에 대하여 책임을 다할 것이며, 그와 관련된 변호사 비용을 포함한 모든 법적 비용, 판결, 명령 뿐만 아니라 추가 검사비용, Line-stop, 재작업 등의 내부 비용과 벌금, 리콜, 서비스 처리, 보상 등 외부 Claim 비용 및 기타 손실에 대해 책임질 것을 보증합니다.

3. 당 보증서의 효력은 년 월 일부터 년 월 일까지 유효하며, 보증 만료일 한달 전까지 양사간 별도 의사표시가 없을 시 자동으로 연장됩니다.

4. 당 보증서와 관련된 모든 분쟁은 중재에 의해 최종적으로 해결된다. 중재는 대한상사중재원의 상사중재규칙에 따라 진행한다. 중재는 대한민국 서울에서 진행되며, 중재인에 의하여 내려지는 판정은 최종적인 것이며 당사자인 삼성전자와 당사에 대하여 구속력을 가진다.

당사의 공인된 대표자로서 서명합니다.

서 명 :_____ **날 짜 :**_____

이름 (직위):
회 사 명 :
주 소 :

제품환경보증서

Letter of Warranty and Representation(ENG)

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 guarantees full compliance with all relevant international regulations concerning the substances with environmental impacts.
B. Company guarantees full compliance with the latest version of 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:

Letter of warranty

Declaration of Non-Use of cobalt dicloride

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 :

Declaration of Non-Use