



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

**Revision 18**

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**Samsung Electronics Co., Ltd**

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	2

## Contents

### Chapter 1 General Provision

Article 1 (Preface)

Article 2 (Purpose)

Article 3 (Scope)

Article 4 (Definitions)

Article 5 (Standard for Operation and Management)

### Chapter 2 Standard for Control of Substances concerning Product production

Article 6 (Standard for Control of Substances in Products)

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

Article 8 (Standard for Control of Substances in Batteries)

[Article 9 \(Standard for Control of Substances in Wearable Products\)](#)

### # Annex

Annex 1: Eco-partner certification for suppliers

Annex 2: Exemptions of control of substances

Annex 3: Examples of substances and its compounds

Annex 4: Substances in EU SVHC candidate list

[Annex 5: Submission format for Eco-partner certification](#)

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	3

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	4

### 3. Exemptions

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

### 4. Threshold Limit

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

### 5. Precision Analysis

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

#### 1) Organic Materials

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

#### 2) Inorganic Materials

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

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

\* AFS: Atomic fluorescence Spectrometry

\* ICP: Inductively Coupled Plasma

\* UV-VIS: Ultraviolet-Visible Spectroscopy

\* GC/MS: Gas Chromatography/Mass Spectrometry

\* C-IC: Combustion Ion Chromatography

\* IAMS : Ion Attachment Mass Spectrometry

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

### 6. Outsourced finished product

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

### 7. Purchasing product

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	5

### 8. Volatile Organic Compounds, VOC

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

#### Article 5 (Standard for Operation and Management)

1. The company manages Substances concerning Product Environment by classifying them as Class I, II, III and others. The substances are restricted from application date. Standards and methods of control are regularly revised.
2. The company will provide a grace period for improvements until substitutes or other methods are available.
3. The suppliers submit an approval sheet with the contents of Substance concerning Product Environment of the new supplies on in written document and comply with the Standards for Control of Substances concerning Product Environment.

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	6

## Chapter 2 Standard for Control of Substances concerning Product production

### Article 6 (Standard for Control of Substances in Products)

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

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

#### 2. List of Control of substances in products

**Table 1. Banned and restricted substances**

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

These substances are restricted to be used in products.

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	7

**Table 2. Banned and restricted substances**

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

These substances are restricted to be used in products.

Class	Substance / Material	Regulation
II	Polychlorinated biphenyls (PCBs) Polychlorinated terphenyls (PCTs) Polychlorinated naphthalenes (PCNs, with three or more chlorine substituents)	Stockholm Convention ANNEX XVII of REACH Regulation (EC) No 1907/2006; Japan Law concerning the evaluation of chemical substances
	Ozone layer depleting substances /Greenhouse Gas(CFCs, HCFCs, Halons, HFCs, PFCs, SF6)	Montreal Protocol EC 1005/2009 (EC 2037/2000) US Clean Air Act, No 517/2014 EU
	Asbestos	ANNEX XVII of REACH Regulation (EC) No 1907/2006;
	Formaldehyde	Austria - BGB I 1990/194: Formaldehydverordnung, §2, 12/2/1990; US CA Code of Regulation §93120
	Short-chain chlorinated paraffins (Alkane 10~13 carbon chain)	ANNEX XVII of REACH Regulation (EC) No 1907/2006;
	Azo colorants	ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Nickel and its compounds	ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Organic tin compounds	EU REG. NO. 276/2010 ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Arsenic and its compounds	ANNEX XVII of REACH Regulation (EC) No 1907/2006
	PFOSs(Perfluorooctane Sulfonates )	Stockholm convention COMMISSION REGULATION (EU) No 757/2010 Commission Regulation (EC) No 552/2009;
	DMF(Dimethylfumarate)	COMMISSION DECISION 2009/251/EC
	PCP(Pentachlorophenol)	Norway Product Regulation Annex XVII of REACH Regulation (EC) No 1907/2006
	PFOA (Pentadecafluorooctanoic acid)	Norway Product Regulation Annex XVII of REACH Regulation (EC) No 1907/2006
	PAH Polycyclic Aromatic Hydro carbons	Annex XVII of REACH regulation (EC) No 1907/2006
	Bisphenol A	France ACT N.2012-1442 of 24 Dec.2012 to suspend manufacture, import, export and placing on the market of any packaging for food containing Bisphenol A
	HBCD(Hexabromocyclododecane)	Norway: Product Regulation No. 922 of 2004 - Amendment ANNEX XVII of REACH Regulation (EC) No 1907/2006
	Nonylphenol, Nonylphenol Ethoxylate	Turkey: Hazardous Chemical Content of some Consumer Products
	6 Phthalates <sup>*)</sup> (BBP, DBP, DEHP, DINP, DIDP, DNOP)	US CPSC Public Law 110-314

\*) BBP, DBP, DEHP is listed as Class I but retains in Class II owing to difference in application date

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	8

**Table 3. Voluntary phase-out of substances**

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

Class	Substance / Material	Application	Start of Phase-out	Phase-out Date
III	TBBP-A	All products	-	Jan, 2008
	Brominated Flame Retardants	Printed wiring boards in mobile phones	-	Jul, 2007
		Mobile phones (including accessories and chargers)	Jan, 2009	Jan, 2010
		MP3 players (including accessories)	Jul, 2009	
		Digital cameras and Camcorders: main PWB and case	Jan, 2010	Jul, 2010
		Notebooks	Jan, 2011	Jan, 2012
	PVC	Mobile phones (including accessories and chargers)	Jul, 2009	Apr, 2010
		MP3 players (including accessories)		
		Digital cameras and Camcorders: internal wires	Jan, 2010	Jul, 2010
		TVs: Internal wires (except LCD/LED panel and PDP module)	Sep, 2009	Jan, 2011
		Notebooks (except power cord and adapter)	Jan, 2011	Jan, 2012
		Monitors: internal wires (except panel)		
	Home theaters: internal wires			
	Phthalates	Mobile phones (including accessories and chargers)	Jan, 2010	Jan, 2011
		MP3 players (including accessories)		
		Digital cameras and Camcorders: internal wires	Jan, 2012	Jan, 2013
		TVs: internal wires (except LCD/LED panel and PDP module)		
		Notebooks (except power cord and adapter)		
		Monitors: internal wires (except panel)		
		Home theaters: internal wires		
	Printers ( >25g plastic part (excepting power cord)	-	Jun,2013	
Antimony Compounds	Mobile phones (including accessories and chargers)	Jan, 2012	Jan, 2013	
	MP3 players (including accessories)			
	Digital cameras and Camcorders: Main PWB, case and internal wires			
	TVs: internal wires (except LCD/LED panel and PDP module)			
	Notebooks (except power cord and adapter)			
	Monitors: internal wires (except panel)			
Beryllium and its compounds	Mobile phones , MP3 players (including accessories and chargers)	Jan, 2010	Jan, 2011	
	All products	Jan, 2012	Jan, 2013	
Cobalt dichloride	All product	-	Jun.2011	
Chlorinated Flame Retardants	Mobile phones, MP3 players (including accessories and chargers)	Jan.2011	Jan, 2012	
VOCs	Mobile phones, PC (including accessories and chargers)	Oct.2014	Jan.2015	

Notes:

- **Start of Phase-out:** Date from which **ALL NEW MODELS starting development** will be free of target substances according to application scope above. The phase-out is not applied to THE MODELS already developed and in development before the start date of phase-out. / **Phase-out Date:** Date from which **ALL NEW MODELS put on the market** will have achieved phase-out according to application scope above.
- This voluntary phase-out doesn't apply to non-consumer products.



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	9

**Table 4. Monitored substances**

Class	Substance / Material	Application Product	Remarks
Others	Radioactive Substances	All products	Substances need to be monitored such as EU REACH SVHC candidate list or substances which are expected to regulate in the future
	MCCP		
	Triclosan		
	PFRs(Triphenyl phosphate)		
	Substances in SVHC candidate list *		

\* Substances in EU REACH SVHC Candidate list(169 substances by June 2016), refer to [Annex-4](#) (<http://echa.europa.eu/web/guest/candidate-list-table>)

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	10

### 3. Standard for Control of Class I Substances

Note: ppm = mg/kg by weight

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

#### 1) Cadmium and its compounds (Cd)

Example of use	pigment, anti-corrosion surface treatment, electric and electronic materials, optical material, stabilizer, stabilizer for PVC, plating, electrode, pigment of resin, fluorescence material, solder, electric contact		
Application	Organic materials	Inorganic materials	
Threshold Limit	5ppm	80ppm	
Implementation date	January 2005		
Test Equipment	ICP, AAS, AFS		
Test Method	IEC 62321-5:2013, EPA-3051, EPA-3052 and etc.		

#### 2) Lead and its compounds (Pb)

Example of use	rubber hardener, pigment, paint, lubricant, plastic stabilizer, battery material, free-machining alloy, free-cutting steels, optical materials, X-ray shielding in CRT glass, electrical solder materials, mechanical solder, curing agent, vulcanizing agent, resin stabilizer, plating, metal alloy, resin additives			
Application	Organic materials	Inorganic materials	Accessible parts of children's product(12 years or younger) <sup>1)</sup>	
			Paint, coating	Others
Threshold Limit	100ppm	800ppm	90ppm	100ppm
Implementation date	January 2005		September 2015	
Test Equipment	ICP, AAS, AFS			
Test Method	IEC 62321-5:2013, EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004 and etc.		CPSC-CH-E1003-09.1	CPSC-CH-E1001-08.1 CPSC-CH-E1002-08.1

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

#### 3) Mercury and its compounds (Hg)

Example of use	fluorescent bulb, contact point material, pigment, anti-corrosion, high-efficiency phosphor, antibacterial treatment		
Application	Organic materials	Inorganic materials	
Threshold Limit	800ppm	800ppm	
Implementation date	January 2005		
Test Equipment	ICP, CV-AAS, AFS, DMA		
Test Method	IEC 62321-4:2013, EPA 3050B, EPA-3052 and etc.		

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	11

#### 4) Hexavalent chromium and its compounds (Cr<sup>+6</sup>)

Example of use	pigment, paint, ink, catalyst, plating, anti-corrosion surface treatment, dye, paint dryer, surface treatment, chromate treatment, paints adhesionenhancement, anti-corrosion		
Application	Organic materials	Inorganic materials	Genuine leathers having contact with skin
Threshold Limit	800ppm	800ppm	3ppm
Implementation date	February 2005		May 2015
Test Equipment	IC, UV/VIS		
Test Method	Metal coating : IEC 62321-7-1:2015 Polymer : IEC 62321-7-2:111/408/CDV, EPA-3050B,EPA-3052 etc.		ISO 17075

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

#### 5) Polybrominated biphenyls (PBBs)

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

#### 6) Polybrominated diphenylethers (PBDEs)

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

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

#### 7) Benzyl butyl phthalate (BBP)

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	12

### 8) Dibutyl phthalate (DBP)

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

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

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

### 10) Diisobutyl phthalate (DIBP)

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	13

#### 4. Standard for Control of Class2 Substances

Note: ppm = mg/kg by weight

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

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

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

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

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

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

#### 13) Asbestos and its compounds

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	14

#### 14) Formaldehydes

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

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

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

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

#### 16) Azo colorants

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	15

### 17) Nickel and its compounds (Ni)

Example of use	pigment, paint, optical thin film, reflection coating, battery materials, conductive, materials, semiconductors, surface treatment, magnetic thin film, nickel plating, electrode, catalyst, alloy
Application	Resurfacing and External metal components intended to come into direct and prolonged contact with the skin (e.g. external antenna, enclosures, belt, strap, ear phone, head set, shoulder string, button, key, ring, decoration)
Threshold Limit	0.5 $\mu\text{g-Ni}/\text{cm}^2$ per week
Implementation date	May 14, 2004
Test Equipment	ICP/OES
Test Method	EN 1811:2011+AC:2015(3samples)

Notes1 : EU REACH restriction limit : 0.5  $\mu\text{g-Ni}/\text{cm}^2$  per week

Acceptable result is below 0.88 $\mu\text{g-Ni}/\text{cm}^2$  per week according to EN 1811:2011+A1:2015

Notes2 : Nickel emissions management is carried out based on analysis report.

(Refer to e-CIMS(P-EHS) or Approval sheet)

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

Example of use	stabilizer, antioxidant, antimicrobial, anti-fouling composition, preservative, bactericide, paint, pigment	
Application	Paints, inks, anticorrosive agent	All parts
Threshold Limit	No intentional use	1,000ppm
Implementation date	May 14, 2004	January 1, 2012
Test Equipment	GC/MS, GC-FPD	
Test Method	EPA 0280, DIN 38407	

Notes : Dioctyltin (DOT) : One of REACH Annex XVII substances, scope is limited to fiber parts coming into contact with skin(bags, pouches, covers and etc.), wallpaper, flooring, gloves, shoes, child protection product, sanitary product, diaper, clothing and molding kit(RTV-2) for wall.

### 19) Arsenic compounds and its compounds (As)

Example of use	pigment, paint, dye, GaAs semiconductor, flame retardants, tinted glass, metal to metal adhesive, bactericide, wood preservative
Application	Wooden products, totally or partly submerged parts
Threshold Limit	No intentional use
Implementation date	May 14, 2004
Test Equipment	ICP, AAS
Test Method	EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2 EPA200.8, EPA6020, EPA6010B etc.

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	16

### 20) Perfluorooctane Sulfonates (PFOSs)

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

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

### 21) DMF(Dimethylfumarate)

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

### 22) PCP (Pentachlorophenol)

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

### 23) PFOA (Perfluorooctanoic Acid)

Example of use	Coating materials, preservatives etc.
Application	All parts
Threshold Limit	10ppm (Textile and coatings for 1 $\mu\text{g}/\text{m}^2$ )
Implementation date	September 30, 2013
Test Equipment	LC/MS
Test Method	US EPA 3520, 3540, 3550

Exception) Food contact materials, medical devices



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	17

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

Example of use	Rubbers, Headphones, 3D Glasses
Application	Consumer products
Threshold Limit	1ppm (products intended for children 0.5ppm)
Implementation date	27th December 2015
Test Equipment	GC/MS
Test Method	US EPA 3630C, 8100, 8310

#### 25) Bisphenol A

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

#### 26) HBCD (Hexabromocyclododecane)

Example of use	Flame retardant etc.	
Application	Components for Korean · European market	Components for others
Threshold Limit	No intentional use	No intentional use
Implementation date	1 <sup>st</sup> July 2015	1 <sup>st</sup> October 2015
Test Equipment	GC/MS, LC/MS	
Test Method	EPA 3540C, EPA 3545, EPA 3550B etc.	

#### 27) Nonylphenol, Nonylphenol Ethoxylate

Example of use	Cleaner, surfactants
Application	Leather, fiber, paper * medical equipment is excluded
Threshold Limit	No intentional use
Implementation date	14 <sup>th</sup> January 2015
Test Equipment	HPLC, LC/MS
Test Method	ASTM D7485, ASTM D7065 etc.

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	18

**28) 6 phthalates (BBP, DBP, DEHP, DINP, DIDP, DNOP)**

Example of use	Plasticizer etc.
Application	Accessible parts of children's product(12 years or younger) which is PVC, rubber, adhesive, paint <sup>1)</sup>
Threshold Limit	900 ppm each
Implementation date	1 <sup>st</sup> September 2015
Test Equipment	GC/MS
Test Method	CPSC-CH-C1001-09.3

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

※ BBP,DBP,DEHP is listed as Class1 but retains in Class2 owing to difference in application date

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	19

### 5. Standard for Control of Class III substances

Note: ppm = mg/kg by weight

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

No	Substance	Application	Threshold Limit	Test Equipment	Test Method	Example of use
29	Tetrabromo bisphenol-A (TBBP-A)	Organic materials	900 ppm	GC/MS LC/MS	EPA-3540C, EPA-3545 EPA-3550B	flame retardant
30	Brominated flame retardants (BFRs)	Organic materials	No intentional use (Br 900ppm)	IC	EN 50267-2-2, EN 14582:2007, ASTM D7359	flame retardant
31	Polyvinyl chloride (PVC)	Organic materials	No intentional use (Cl 900ppm)	FT-IR	KS 0210	wire jacket
32	Phthalates <sup>*)</sup>	Organic (PVC, Rubber, Adhesive, Paint)	1,000 ppm	GC/MS HPLC-UV, IAMS, Py-GC/MS	IEC 62321-8(111/416/CDV), ASTM D3421-75, EN 14372:2004, US EPA 3540C, US CPSCCH-C1001-09.1, EPA 0506, KSM 1991 ≡	Plasticizer, Resistance chip, Paste, Coating adhesive, Artificial leather
33	Antimony and compounds	All parts	700 ppm	ICP	EPA 3050B, ISO 8124-3, EPA 3052, KS K 0852, KS K 0731, EPA 7062	flame retardant
34	Beryllium and its compounds	All parts	1,000 ppm	ICP	EPA 3050B, ISO 8124-3, EPA 3052, KS K 0852, KS K 0731 EPA 7062	Connector
35	Cobalt dichloride	All parts	No intentional use (Co 1,000ppm)	ICP	EPA-3052, BS 3482-9:1991[desiccants]	silica gel, humidity Indicator
36	Chloride Flame Retardants	Organic materials	No intentional use (Cl 900ppm)	IC	EN 50267-2-2, EN 14582:2007, ASTM D7359	flame retardant
37	Volatile Organic Compounds	All	Toluene: 16ppm Benzene: 0.8ppm Formaldehyde: 0.08ppm	GC/MS, SIFT/MS, HPLC, Detection tube	SEC Mobile guidance	adhesive, paint additive
		Cable, Cord	Phosphine : 0.08ppm			phosphorus flame retardant (red phosphorus)

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

\* Phthalate means 17 substances listed in "Appendix-3" 32.

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	20

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

### 1. Definition of Packaging Materials

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

### 2. Standard for Control of Substances in Packaging Materials

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

ppm = mg/kg by packaging weight

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

#### 1) Cadmium, Lead, Mercury and Hexavalent chromium (Cd, Pb, Hg and Cr<sup>+6</sup>)

Example of use	Refer to Detailed example of use of Class I substances in products
Application	All packaging materials
Threshold Limit	80 ppm (Sum of concentrations of Cd, Pb, Hg and Cr+6)
Implementation date	14th May 2004
Test Equipment	ICP, AAS
Test Method	IEC62321(Ed.2008),EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004

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

Example of use	foam blowing agent
Application	All packaging materials
Threshold Limit	No intentional use
Implementation date	14th May 2004
Test Equipment	GC/ECD
Test Method	EPA-8021B, EPA-524.1, EPA-524.2

#### 3) Polyvinyl chloride (PVC)

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	21

#### 4) Brominated flame retardants (BFRs)

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

#### 5) Cobalt dichloride (CoCl<sub>2</sub>)

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	22

## Article 8 (Standard for Control of Substances in Batteries)

### 1. Definition of batteries

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

### 2. Standard for Control of Substances in Batteries

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

ppm = mg/kg by weight in battery

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

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

#### 1) Cadmium and its compounds (Cd)

Example of use	Refer to Detailed example of use of Class I substances in products		
Application	Batteries and accumulators		
Threshold Limit	10 ppm	2 ppm	
Implementation date	14th May 2004	December 2013	
Test Equipment	ICP, AAS		
Test Method	IEC62321(Ed.2008), EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004		

#### 2) Lead and its compounds (Pb)

Example of use	Refer to Detailed example of use of Class I substances in products		
Application	Batteries and accumulators		
Threshold Limit	40 ppm		
Implementation date	14th May 2004		
Test Equipment	ICP, AAS		
Test Method	IEC62321(Ed.2008), EPA-3050B, EPA-3051, EPA-3052, ISO 6101-2, ISO 6503, ASTM 3505B, ASTM 4004		

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

#### 3) Mercury and it compounds (Hg)

Example of use	Refer to Detailed example of use of Class I substances in products		
Application	Batteries and accumulators		
Threshold Limit	1 ppm (button cell 20,000 ppm)		
Implementation date	14th May 2004		
Test Equipment	ICP, AAS		
Test Method	IEC62321(Ed.2008), EPA-3051, EPA-3052		

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	23

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

### 1. Definition of wearable products

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

### 2. Standard for Control of Substances in wearable products

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

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

2) Implementation date : 1<sup>st</sup> September 2015

3) Substance and limit

( ppm = mg/kg by weight )

Name	Natural fiber	Synthetic fabric	Leather	Method	
pH Value(unit : pH)	4.0~7.5	4.0~7.5	3.5~7.5	Korean Ecolabel Test Method EL311-1997/7/2013-23	
Formaldehyde	75	75	75		
Pentachlorophenol	0.5	0.5	0.5		
Sum of Tetrachlorophenols	0.5	0.5	0.5		
Sum of Trichlorophenols	0.5	0.5	0.5		
Arsenic	1	-	-		
Lead	1	1	1		
Cadmium	0.1	0.1	0.1		
Mercury	0.02	-	-		
Copper	50	50	50		
Chromium	2.0	2.0	2.0 <sup>1)</sup>		
Hexavalent chromium	0.5	0.5	0.5		
Cobalt	4	4	4		
Nickel	4	4	4		
Antimony	10	10	10		
PFOS(ug/m2) <sup>2)</sup>	1	1	1		
PFOA(mg/kg) <sup>2)</sup>	0.25	0.25	0.25		
Pesticides, Sum	1	-	-		
Organo stannic compounds(TBT,TPT,DBT,DOT), Each	1	1	1 <sup>1)</sup>		
Phthalate, Sum	1000	1000	1000		
Azo dyestuffs, Each	20	20	20		
Dimethyl formamide(DMF)	-	-	0.1		
Sum of Chlorinated benzene, chlorinated toluene	-	1	-		
Sum of Alkyl phenols	100	100	100		
Sum of Alkylphenol ethoxlates	1000	1000	1000		
Sum of Short-chain chlorinated paraffins(SCCP)	1000	1000	1000		EPA 3540C
Allergenic dyestuffs, carcinogenic dyestuffs, Each	50	50	50		DIN 54231:2005

1) These limit applies to only artificial leather.

2) PFOS/PFOA : Water and oil repellent finishing or coating only

3) Method "OEKO-TEX Standard 100" should be used when requesting tests by external laboratories.

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	24

## # Annex 1 : Eco-partner certification for suppliers

### 1. Purpose

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

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

### 2. Scope

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

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

### 3. Criteria for certification

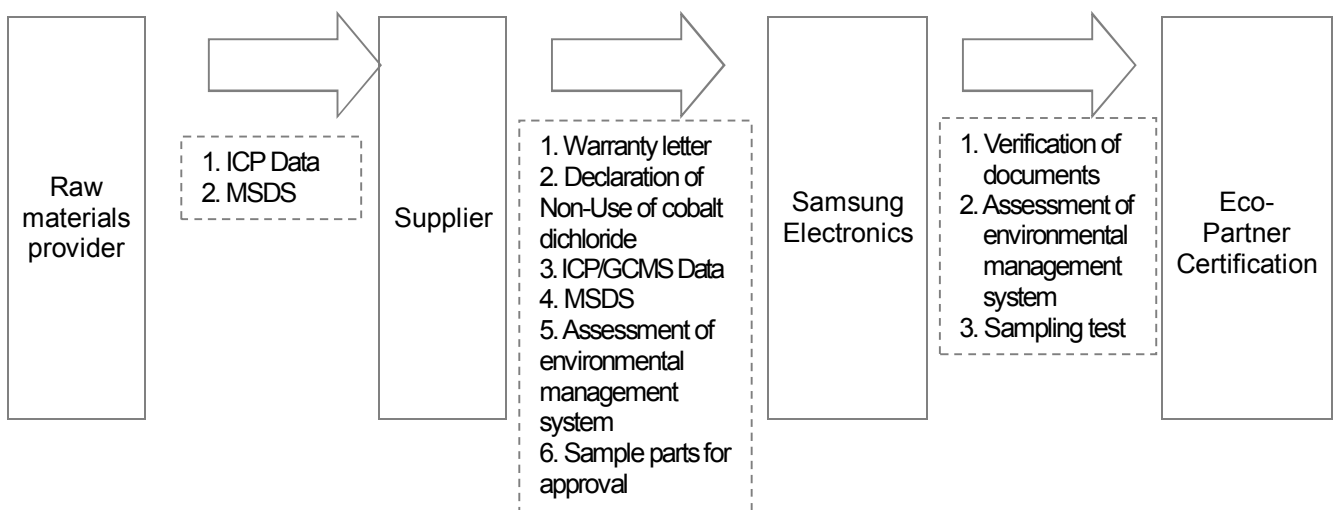
Compliance with Standards for control of substances used in products (0QA-2049) and the supplier's environmental management systems, will be assessed.

#### 1) Criteria

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

\* Penalty: 1<sup>st</sup> fail → re-assessment in one month, 2<sup>nd</sup> fail → trade suspension for 6 months, 3<sup>rd</sup> 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



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	25

## # Annex 2. Exemptions list

### 1. Exemptions of Class I

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

Exemption		Scope and dates of applicability
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	-
1(a)	For general lighting purposes < 30 W : 5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011 until 31 December 2012; 2,5 mg shall be used per burner after 31 December 2012
1(b)	For general lighting purposes $\geq$ 30 W and < 50 W: 5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011
1(c)	For general lighting purposes $\geq$ 50 W and < 150 W: 5 mg	-
1(d)	For general lighting purposes $\geq$ 150 W: 15 mg	-
1(e)	For general lighting purposes with circular or square structural shape and tube diameter $\leq$ 17 mm	No limitation of use until 31 December 2011; 7 mg may be used per burner after 31 December 2011
1(f)	For special purposes: 5 mg	-
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 mg	Expires on 31 December 2017
2(a) (1)	Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 5 mg	Expires on 31 December 2011; 4 mg may be used per lamp after 31 December 2011
2(a) (2)	Tri-band phosphor with normal lifetime and a tube diameter $\geq$ 9 mm and $\leq$ 17 mm (e.g. T5): 5 mg	Expires on 31 December 2011; 3 mg may be used per lamp after 31 December 2011
2(a) (3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and $\leq$ 28 mm (e.g. T8): 5 mg	Expires on 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011
2(a) (4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 5 mg	Expires on 31 December 2012; 3,5 mg may be used per lamp after 31 December 2012
2(a) (5)	Tri-band phosphor with long lifetime ( $\geq$ 25 000 h): 8 mg	Expires on 31 December 2011; 5 mg may be used per lamp after 31 December 2011
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b) (1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2012
2(b) (2)	Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b) (3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
2(b) (4)	Lamps for other general lighting and special purposes (e.g. induction lamps)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp)	-
3(a)	Short length ( $\leq$ 500 mm)	No limitation of use until 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011
3(b)	Medium length (> 500 mm and $\leq$ 1 500 mm)	No limitation of use until 31 December 2011; 5 mg may be used per lamp after 31 December 2011
3(c)	Long length (> 1 500 mm)	No limitation of use until 31 December 2011; 13 mg may be used per lamp after 31 December 2011

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	26

### 1. Exemptions of Class I

Exemption		Scope and dates of applicability
4(a)	Mercury in other low pressure discharge lamps (per lamp)	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011
4(b)	Mercury in High Pressure Sodium (vapor) lamps for general lighting purposes not exceeding (per burner) in lamps with improved color rendering index Ra > 60:	-
4(b)-I	P ≤ 155 W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(b)-II	155 W < P ≤ 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(b)-III	P > 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(c)	Mercury in other High Pressure Sodium (vapor) lamps for general lighting purposes not exceeding (per burner):	-
4(c)-I	P ≤ 155 W	No limitation of use until 31 December 2011; 25 mg may be used per burner after 31 December 2011
4(c)-II	155 W < P ≤ 405 W	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011
4(c)-III	P > 405 W	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011
4(d)	Mercury in High Pressure Mercury (vapor) lamps (HPMV)	Expires on 13 April 2015
4(e)	Mercury in metal halide lamps (MH)	-
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	-
4(g)	<a href="#">Hand crafted Luminous Discharge Tubes (HLDT) used for signs, decorative or architectural and specialist lighting and light-artwork</a>	Expires on 31 <sup>st</sup> Dec. 2018
5(a)	Lead in glass of cathode ray tubes	-
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	-
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight	-
6(b)	Lead as an alloying element in aluminum containing up to 0,4 % lead by weight	-
6(c)	Copper alloy containing up to 4 % lead by weight	-
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)	-
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission, and network management for telecommunications	-
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	-
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	-

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	27

## 1. Exemptions of Class I

Exemption		Scope and dates of applicability
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors	
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	-
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	-
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	-
11(a)	Lead used in C-press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C-press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	Lead in white glasses used for optical applications	-
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	-
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight	Expires on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	-
16	Lead in linear incandescent lamps with silicate coated tubes	Expires on 1 September 2013
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	-
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) 2 MgSi 2 O 7 :Pb)	Expires on 1 January 2011
18(b)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi 2 O 5 :Pb)	-
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)	Expires on 1 June 2011

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	28

### 1. Exemptions of Class I

	Exemption	Scope and dates of applicability
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	Expires on 1 June 2011
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	-
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	May be used in spare parts for EEE placed on the market before 24 September 2010
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	-
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	-
26	Lead oxide in the glass envelope of black light blue lamps	Expires on 1 June 2011
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers	Expired on 24 September 2010
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC ( 1 )	-
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	-
31	Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting)	-
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	-
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	-
34	Lead in cermet-based trimmer potentiometer elements	-
35	Cadmium in photoresistors for optocouplers applied in professional audio equipment	-
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	Expired on 1 July 2010
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	-
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	-
39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm <sup>2</sup> of light-emitting area) for use in solid state illumination or display systems	Expires on 1 July 2014
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment	Expires on 31 December 2013
41	Solders and termination finishes of electrical and electronic components, finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems	Expires on 31 December 2018
41	Dielectric ceramic in capacitors for a rated voltage of less than 125V AC or 250V DC for industrial monitoring and control instruments	Expires on 31 December 2020

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	29

## # Annex 2. Exemptions list(Medical devices and monitoring and control instruments)

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

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

Exemption		Scope and dates of applicability
1	Lead, cadmium and mercury in detectors for ionising radiation.	22 <sup>nd</sup> July 2021
2	Lead bearings in X-ray tubes.	22 <sup>nd</sup> July 2021
3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	22 <sup>nd</sup> July 2021
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.	22 <sup>nd</sup> July 2021
5	Lead in shielding for ionising radiation.	22 <sup>nd</sup> July 2021
6	Lead in X-ray test objects.	22 <sup>nd</sup> July 2021
7	Lead stearate X-ray diffraction crystals.	22 <sup>nd</sup> July 2021
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers.	22 <sup>nd</sup> July 2021
	Sensors, detectors and electrodes	22 <sup>nd</sup> July 2021
	1a Lead and cadmium in ion selective electrodes including glass of pH electrodes.	22 <sup>nd</sup> July 2021
	1b Lead anodes in electrochemical oxygen sensors.	22 <sup>nd</sup> July 2021
	1c Lead, cadmium and mercury in infra-red light detectors.	22 <sup>nd</sup> July 2021
1d Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	22 <sup>nd</sup> July 2021	
9	Cadmium in helium-cadmium lasers.	22 <sup>nd</sup> July 2021
10	Lead and cadmium in atomic absorption spectroscopy lamps.	22 <sup>nd</sup> July 2021
11	Lead in alloys as a superconductor and thermal conductor in MRI.	22 <sup>nd</sup> July 2021
12	Lead and cadmium in metallic bonds to superconducting materials in MRI and SQUID detectors.	Expires on 30 June 2021
13	Lead in counterweights.	22 <sup>nd</sup> July 2021
14	Lead in single crystal piezoelectric materials for ultrasonic transducers.	22 <sup>nd</sup> July 2021
15	Lead in solders for bonding to ultrasonic transducers.	22 <sup>nd</sup> July 2021
16	Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or relay.	22 <sup>nd</sup> July 2021
17	Lead in solders in portable emergency defibrillators.	22 <sup>nd</sup> July 2021
18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14 $\mu$ m.	22 <sup>nd</sup> July 2021
19	Lead in Liquid crystal on silicon (LCoS) displays.	22 <sup>nd</sup> July 2021
20	Cadmium in X-ray measurement filters.	22 <sup>nd</sup> July 2021
21	Cadmium in phosphor coatings in image intensifiers for X-ray images X-ray	until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.
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.	Expires on 30 June 2021.
23	Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation.	Expires on 30 June 2021.

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	30

### 1. Exemptions of ClassI: Equipment utilizing or detecting ionizing radiation

	Exemption	Scope and dates of applicability
24	Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers.	Expires on 31 December 2019.
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.	Expires on 30 June 2021.
26	Lead in the following applications that are used durably at a temperature below – 20 °C under normal operating and storage conditions: (a) solders on printed circuit boards; (b) termination coatings of electrical and electronic components and coatings of printed circuit boards; (c) solders for connecting wires and cables; (d) solders connecting transducers and sensors. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below – 150 °C.	Expires on 30 June 2021
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.	Expires on 30 June 2020
28	Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards.	Expires on 31 December 2017.
29	Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	Expires on 30 June 2021.
30	Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.	Expires 31 <sup>st</sup> December 2019 (applies to spare parts for equipment placed on the EU market before 1 January 2020).
31(a)	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	(a)21 July 2021 for the use in medical devices other than in vitro diagnostic medical devices; (b)21 July 2023 for the use in in vitro diagnostic medical devices; (c)21 July 2024 for the use in electron microscopes and their accessories.
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.	Expires on 31 December 2019

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	31

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

Exemption		Scope and dates of applicability
33	Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa and IIb mobile medical devices other than portable emergency defibrillators.	Expires on 30 June 2016 for class IIa and on 31 December 2020 for class IIb.
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.	Expires on 22 July 2021.
35	Cold Cathode Fluorescent Lamps (CCFL) for backlighting liquid crystal displays	Expires on 21 Jul. 2024.
36	C-press compliant pin connector systems for industrial monitoring and control instruments	Expires on 31 Dec. 2020
37	Platinised platinum electrodes used for conductivity measurements	Expires on 31 Dec. 2018.
38	Solder in one interface of large area stacked die elements	Expires on 31 Dec. 2019
39	Micro-Channel Plates(MCPs)	Expires on 21 Jul. 2021(Category 8 and Cat 9 Monitoring and control instruments), 2023 (In vitro Diagnostics), 2024 (Cat. 9 Industrial monitoring control instruments)
40	Dielectric ceramic in capacitors for a rated voltage of less than 125V AC or 250V DC for industrial monitoring and control instruments	Expires on 31 Dec. 2020 (applies to spare parts for equipment placed on the EU market before 1 January 2021)
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	Expires on 31 Dec. 2018.
42	Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation	Expires on 30 June 2019.
43	<a href="#">Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required</a>	<a href="#">Expires on 15 July 2023</a>

STANDARD	<b>Standards for Control of Substances used in products</b>	<b>Registration No.</b>	<b>Revision No.</b>	<b>Page</b>
		0QA-2049	18	32

## 2. Exemptions of Class II

Exemption		Scope and dates of applicability
PFOS	Photoresists or anti reflective coatings for photolithography process	Expires on 31 December 2015
PFOS	Photographic coatings applied to films, papers, or printing plates	
PFOS	Mist suppressants for non-decorative hard chromium (VI)	

## 3. Exemptions of Class III

Exemption		Scope and dates of applicability
Sb	Added in ceramics for certain electronic components	HHP : Expires on 31 January 2012
Sb	Used as a catalyst in polymeric materials for certain electronic components	HHP : Expires on 31 January 2012
Sb	Additives in optical glass for preventing air bubbles and removing impurities.	
Sb	Resistive layer inside Resistor Chip for technical reason	-
Sb	SnSb paste used for installation of LSC(Land Side Capacitor) on CPU Substrate of PC	-
Sb	Additives for thermal conduction on N type semiconductor(Bi <sub>2</sub> (Te, Se) <sub>3</sub> ) and P type semiconductor((Bi, Sb) <sub>2</sub> Te <sub>3</sub> ) Used in Thermal Electronic devices	-
Be	Beryllium alloy used in connectors and certain electronic components	-

## 4. Exemptions of Substances in Packages

Exemption		Scope and dates of applicability
Cd Pb Hg Cr <sup>6+</sup>	<ul style="list-style-type: none"> <li>- Packaging entirely made of lead crystal glass</li> <li>- Glass packaging is allowed to exceed where it complies with all the conditions established in (Commission Decision 2001/171/EC)</li> <li>· No lead, cadmium, mercury or hexavalent chromium shall be intentionally introduced during the manufacturing process</li> <li>· The packaging material may only exceed the concentration limits because of the addition of recycled materials</li> </ul>	



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	33

### # Annex 3. Examples of substances and its compounds (Class I)

#### 1) Cadmium and its compounds

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

#### 2-1) Lead and its compounds

Substance name	CAS No
Lead; metal	7439-92-1
Lead/Tin alloy	-
Lead monoxide (lead oxide)	1317-36-8
Lead(IV)oxide	1309-60-0
Dilead trioxide	-
Orange lead (lead tetroxide)	1314-41-6
Lead diazide, Lead azide	13424-46-9
Lead( II )fluoride	7783-46-2
Lead( II )chloride	7758-95-4
Lead(IV)chloride	13463-30-4
Lead( II )iodide	10101-63-0
Lead( II )sulfide	1314-87-0
Lead( II )cyanide	592-05-2
Lead bis(tetrafluoroborate)	13814-96-5
Lead fluosilicate	25808-74-6
Lead dinitrate	10099-74-8
Lead carbonate	598-63-0
Lead hydroxycarbonate	1344-36-1
Lead perchlorate	13637-76-8
Lead( II ) sulfate	7446-14-2, 15739-80-7
Tetralead trioxide sulphate	12202-17-4
Lead( II ) phosphate	7446-27-7
Lead thiocyanate	592-87-0
Lead( II )acetate, trihydrate	6080-56-4
Lead di(acetate)	301-04-2
Lead(IV)acetate	546-67-8
Lead oleate	1120-46-3
Lead stearate	1072-35-1, 7428-48-0
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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	34

### 2-2) Lead and its compounds

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
Silicic acid (H <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> ), 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	-

### 3) Mercury and its compounds

Substance name	CAS No
Mercury	7439-97-6
Mercury alloys; amalgam	-
Mercury( I )oxide	15829-53-5
Mercury( II )oxide	21908-53-2
Mercury( I )chloride	10112-91-1
Mercury( II )chloride	7487-94-7
Mercury( II )nitrate	10045-94-0
Mercury( I )sulfate	7783-35-9

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	35

Mercury( II )fulminate	628-86-4
Mercury( II )acetate	1600-27-7
Methylmercury salts	e.g. 22967-92-6
Ethylmercury salts	-
Propylmercury salts	-
Phenylmercury salts	-
Methoxyethyl-mercury salts	-
Dialkylmercury	-
Diphenylmercury	587-85-9
Mercuric sulfide	1344-48-5
Mercuric chloride	33631-63-9
Other mercury compounds	-

#### 4) Hexavalent chromium and its compounds

Substance name	CAS No
Chromium trioxide	1333-82-0
Lithium chromate	14307-35-8
Sodium chromate	7775-11-3
Potassium chromate	7789-00-6
Potassium chlorochromate	16037-50-6
Ammonium chromate	7788-98-9
Copper chromate	13548-42-0
Magnesium chromate	13423-61-5
Calcium chromate	13765-19-0
Strontium chromate	7789-06-2
Barium Chromate	10294-40-3
Lead chromate	1344-38-3
Zinc chromate	12018-19-8, 13530-65-9, 14018-95-2
Sodium dichromate	10588-01-9, 7789-12-0
Potassium dichromate	7788-50-9
Ammonium dichromate	7789-09-5
Calcium dichromate	14307-33-6
Chromic acid or Dichromic acid	7738-94-5, 13530-68-2
Copper chromite	12053-18-8
Zinc dichromate	-
Potassium dichromate	7778-50-9
Other chromium compound	-

#### 5) Polybrominated biphenyls (PBBs)

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	36

#### 6) Polybrominated diphenylethers (PBDEs)

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

#### 7) Benzyl butyl phthalate (BBP)

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

#### 8) Dibutyl phthalate (DBP)

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

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

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

#### 10) Diisobutyl phthalate (DIBP)

Substance name	CAS No
Diisobutyl phthalate	84-69-5

### # Annex 3. Examples of substances and its compounds (Class II )

#### 11) Polychlorinated biphenyls (PCBs) / Polychlorinated Terphenyls (PCTs)/ Polychlorinated naphthalenes (PCNs): with 3 or more chlorine substituents

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

#### 12-1) Ozone layer depleting substances & Greenhouse Gas

Substance name	CAS No
CFC-11 (CFCl <sub>3</sub> )	75-69-4
CFC-12 (CF <sub>2</sub> Cl <sub>2</sub> )	75-71-8
CFC-113 (C <sub>2</sub> F <sub>3</sub> Cl <sub>3</sub> )	76-13-1
CFC-114 (C <sub>2</sub> F <sub>4</sub> Cl <sub>2</sub> )	1320-37-2
CFC-115 (C <sub>2</sub> F <sub>5</sub> Cl)	76-15-3
CFC-13 (CF <sub>3</sub> Cl)	75-72-9
CFC-111 (C <sub>2</sub> FCl <sub>5</sub> )	354-56-3
CFC-112 (C <sub>2</sub> F <sub>2</sub> Cl <sub>4</sub> )	28605-74-5

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	37

CFC-211 (C3FCI7)	135401-87-5
CFC-212 (C3F2CI6)	3182-26-1
CFC-213 (C3F3CI5)	2354-06-5
CFC-214 (C3F4CI4)	2268-46-4
CFC-215 (C3F5CI3)	1652-81-9
CFC-216 (C3F6CI2)	662-97-2
CFC-217 (C3F7CI)	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 (C2H3CI3)	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)	-
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)	-

## 12-2) Ozone layer depleting substances & Greenhouse Gas

Substance name	CAS No
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)	70192-83-5
HBFC-244B1 (C3H3F4Br)	679-84-5
HBFC-251B1 (C3H4FBr3)	75372-14-4
HBFC-252B2 (C3H4F2Br2)	460-25-3
HBFC-253B1 (C3H4F3Br)	421-46-5
HBFC-261B2 (C3H5FBr2)	51584-26-0
HBFC-262B1 (C3H5F2Br)	-
HBFC-271B1 (C3H6FBr)	352-91-0
HCFC-21 (CHFCl2)	75-43-4
HCFC-22 (CHF2Cl)	75-45-6
HCFC-31 (CH2FCI)	593-70-4
HCFC-121 (C2HFCl4)	354-14-3
HCFC-122 (C2HF2Cl3)	354-21-2
HCFC-123 (C2HF3Cl2)	306-83-2
HCFC-124 (C2HF4Cl)	2837-89-0

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	38

HCFC-131 (C2H2FCI3)	134237-34-6
HCFC-132 (C2H2F2CI2)	25915-78-0
HCFC-133 (C2H2F3CI)	75-88-7
HCFC-141 (C2H3FCI2)	25167-88-8
HCFC-141b (CH3CFCI2)	1717-00-6
HCFC-142 (C2H3F2CI)	25497-29-4
HCFC-142b (CH3CF2CI)	75-68-3
HCFC-151 (C2H4FCI)	1615-75-4
HCFC-221 (C3HFCI6)	134237-35-7
HCFC-222 (C3HF2CI5)	134237-36-8
HCFC-223 (C3HF3CI4)	134237-37-9
HCFC-224 (C3HF4CI3)	134237-38-0
HCFC-225 (C3HF5CI2)	128903-21-9
HCFC-225ca (CF3CF2CHCI2)	422-56-0
HCFC-225cb (CF2CICF2CHCIF)	507-55-1
HCFC-226 (C3HF6CI)	134308-72-8
HCFC-231 (C3H2FCI5)	134190-48-0
HCFC-232 (C3H2F2CI4)	134237-39-1
HCFC-233 (C3H2F3CI3)	134237-40-4
HCFC-234 (C3H2F4CI2)	127564-83-4
HCFC-235 (C3H2F5CI)	134237-41-5
HCFC-241 (C3H3FCI4)	134190-49-1
HCFC-242 (C3H3F2CI3)	134237-42-6
HCFC-243 (C3H3F3CI2)	134237-43-7
HCFC-244 (C3H3F4CI)	134190-50-4
HCFC-251 (C3H4FCI3)	134190-51-5

### 12-3) Ozone layer depleting substances & Greenhouse Gas

Substance name	CAS No
HCFC-252 (C3H4F2CI2)	134190-52-6
HCFC-253 (C3H4F3CI)	134237-44-8
HCFC-261 (C3H5FCI2)	134237-45-9
HCFC-262 (C3H5F2CI)	134190-53-7
HCFC-271 (C3H6FCI)	134190-54-8
Bromochloromethane (CH2BrCI)	74-97-5
Halon-1202 (CBr2F2)	75-61-6
1-bromopropane (n-propyl bromide) (C3H7Br)	106-94-5
Ethyl bromide (C2H5Br)	74-96-4
Trifluoromethyl iodide (CF3I)	2314-97-8
Methyl chloride (CH3CI)	74-87-3
Other Ozone depleting substances and its compounds	-

### 12-4) Ozone layer depleting substances & Greenhouse Gas

Substance name	CAS No
Carbon tetrafluoride (Perfluoromethane)	75-73-0
Perfluoroethane (Hexafluoroethane)	76-16-4
Perfluoropropane (Octafluoropropane)	76-19-7
Perfluorobutane (Decafluorobutane)	355-25-9
Perfluoropentane (Dodecafluoropentane)	678-26-2
Perfluorohexane (Tetradecafluorohexane)	355-42-0
Perfluorocyclobutane	115-25-3
Sulfur Hexafluoride (SF6)	2551-62-4
HFC-23 (CHF3)	75-46-7
HFC-32 (CH2F2)	75-10-5
HFC-41 (CH3F)	593-35-3

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	39

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 (CHF2CHF2CF3)	431-63-0
HFC-236fa (C3H2F6)	690-39-1
HFC-245ca (C3H3F5)	679-86-7
HFC-245fa (CHF2CH2CF3)	460-73-1
HFC-365mfc (CF3CH2CF2CH3)	406-58-6
Other GHGs	-

### 13) Asbestos and its compounds

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

### 14) Formaldehydes

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

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

Substance name	CAS No
ALKANES, C10-12, CHLORO	108171-26-2
Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8
ALKANES, C10-14, CHLORO	85681-73-8
ALKANES, C10-21, CHLORO	84082-38-2
ALKANES, C10-26, CHLORO	97659-46-6
ALKANES, C10-32, CHLORO	84776-06-7
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	-

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	40

#### 16) Azo colorants

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

#### 17) Nickel and its compounds

Substance name	CAS No
Nickel	7440-02-0
Nickel( II )oxide	1313-99-1
Nickel Sulfate	7786-81-4
Nickel Sulfamate solution	13770-89-3
Other Nickel and its compounds	-



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	41

### 18-1) Organic tin compounds (TBT/TPT)

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

### 18-2) Organic tin compounds (DOT)

Substance name	CAS No
Dioctyl tin (DOT)	26401-97-8
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
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	-

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	42

### 18-3) Organic tin compounds (DBT)

Substance name	CAS No
Dibutyl tin (DBT)	1002-53-5
Dibutyltin dimaleate	10192-92-4
Dibutyltin diacetate	1067-33-0
Dibutyltin dilauryl mercaptide	1185-81-5
Dibutyltin dioleate	13323-62-1
Dibutyltin dipalmitate	13323-63-2
Dibutyltin disalicylate	14214-24-5
Di-n-butyltin bis(methyl maleate)	15546-11-9
Dibutyltin di(2-ethylhexyl maleate)	15546-12-0
Di-n-butyltin di(monobutyl)maleate	15546-16-4
Bis (acetato) dibutyltin	17523-06-7
Dibutyltin dihexanoate	19704-60-0
Dibutyltin S,S'-bis (isooctyl mercaptoacetate)	26636-01-1
Dibutyltin bis(octylthioglycolate)	2781-09-01
Dibutyltin dibutoxide	3349-36-8
Dibutyltin dioctanoate	4731-77-5
Dibutyltin dibenzoate	5847-54-1
Dibutyltin distearate	5847-55-2
Diisobutyltin oxide	61947-30-6
Dibutyltin dichloride (DBTC)	683-18-1
Dibutyltin bis(benzyl maleate)	7324-74-5
Dibutyltin hydrogen borate	75113-37-0
Dibutyltin dilaurate	77-58-7
Dibutyltin maleate	78-04-6
Dibutyltin mercaptopropionate	78-06-8
Dibutyltin mercaptoacetate	78-20-6
Dibutyltin oxide (DBTO)	818-08-6
Dibutyltin linoleate	85391-79-3
Dibutyltin isooctanoate	85702-74-5
Dibutyltin linolenate	95873-60-2
Dibutyltin diisostearate	59963-28-9
Dibutyltin dibutyrate	28660-63-1
Dibutyltin bis(isooctylmaleate)	25168-21-2
Other Dibutyltin (DBT) compounds	-
Diocetyl tin (DOT)	26401-97-8
2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
Diocetyl tin bis(isooctyl maleate) (DOT)	33568-99-9
Diocetyl tin dichloride (DOT)	3542-36-7
Diocetyl tin dilaurate (DOT)	3648-18-8
Diocetyl tin maleate (DOT)	16091-18-2
Diocetyl tin oxide (DOT)	870-08-6
Diocetyl tin (DOT) compounds	-

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	43

### 19) ) 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
Other Arsenic acid and its salts	-

### 20) Perfluorooctane Sulfonates (PFOSs)

Substance name	CAS No
Perfluorooctane Sulfonates (PFOS) C <sub>8</sub> F <sub>17</sub> SO <sub>2</sub> X, where X = OR, NR or other derivative	-
Perfluorooctane sulfonic acid and its salts	1763-23-1
Perfluorooctane sulfonyl fluoride	307-35-7

### 21) DMF

Substance name	CAS No
Biocide dimethylfumarate	624-49-7

### 22) PCP

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

### 23) 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	-

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	44

#### 24-1) PAHs

Substance name	CAS No
Acenaphthen	83-32-9
Anthracene oil A complex combination of polycyclic aromatic hydrocarbons obtained from coal tar having an approximate distillation range of 300°C to 400°C (572°F to 752°F). Composed primarily of phenanthrene, anthracene and carbazole.	90640-80-5
Acenaphthylen	208-96-8
Anthracene	120-12-7
Anthracene oil, anthracene paste, anthracene fraction	91995-15-2
Anthracene oil, anthracene-low	90640-82-7
Benzo[a]anthracen	56-55-3
Anthracene oil, anthracene paste	90640-81-6
Benzo[b]fluoranthen	205-99-2
Anthracene oil, anthracene paste, distn. lights	91995-17-4
Benzo[j]fluoranthen	205-82-3
Benzo[k]fluoranthen	207-08-9
Benzo[ghi]perylene	191-24-2
Benzo[a]pyren	50-32-8
Benzo[e]pyren	192-97-2
Chrysen	218-01-9
Dibenzo[a,h]anthracen	53-70-3
Fluoranthen	206-44-0
Fluoren	86-73-7
Indeno[1,2,3-cd]pyren	193-39-5
Naphthalin	91-20-3
Phenanthren	85-01-08
Pyren	129-00-0

#### 25) Bisphenol A

Substance name	CAS No
Bisphenol A	80-05-7

#### 26) HBCDD

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

#### 27) Nonylphenol, Nonylphenol Ethoxylates

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

#### 28) 6 Phthalates (BBP, DBP, DEHP, DINP, DIDP, DNOP)

Substance name	CAS No
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7
Butyl benzyl phthalate (BBP)	85-68-7
Dibutylphthalate (DBP)	84-74-2
Diisononyl phthalate (DINP)	28553-12-0
Diisodecyl phthalate (DIDP)	68515-49-1
Di-n-octyl phthalate (DNOP)	117-84-0

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	45

### # Annex 3. Examples of substances and its compounds (Class III)

#### 29) Tetrabromobisphenol-A (TBBP-A)

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

#### 30-1) Brominated Flame Retardants and its compounds

Substance name	CAS No
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14)[Aliphatic/alicyclic brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15)[Aliphatic/alicyclic brominated compounds in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16)[Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17)[Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls] in combination with antimony compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22)[Aliphatic/alicyclic chlorinated and brominated compounds]	-
Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42)[Brominated organic phosphorus compounds]	-
1,2-Bis(2,4,6-tribromo-phenoxy) ethane	37853-59-1
1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8
1,3-Butadiene homopolymer, brominated	68441-46-3
2,3-Dibromo-2-butene-1,4-diol	3234-02-4
2,4,6-tribromo-phenol	118-79-6
2,4,6-Tribromo-phenyl-allyl-ether	3278-89-5
2,4-Dibromo-phenol	615-58-7
2-Hydroxy-propyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2
Bis(2-ethylhexyl)tetrabromo-phthalate	26040-51-7
Bis(methyl)tetrabromo-phthalate	55481-60-2
Brominated epoxy resin end-capped with tribromophenol	135229-48-0
Brominated epoxy resin end-capped with tribromophenol	139638-58-7
Brominated polystyrene(BRPS)	57137-10-7
Brominated trimethylphenyl-lindane	59789-51-4
Bromo dichloromethane	75-27-4
Bromo-/Chloro-alpha-olefin	82600-56-4
Bromo-/Chloro-paraffins	68955-41-9
Chlorinated and brominated phosphate ester	125997-20-8
Decabromo-diphenyl-ethane	84852-53-9
Dibromo-neopentyl-glycol	3296-90-0
Dibromo-propanol	96-13-9

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	46

### 30-2) Brominated Flame Retardants and its compounds

Substance name	CAS No
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-chyclo-octane	31454-48-5
Tetra-decabromo-diphenoxy-benzene	58965-66-5
Tribromo-neopentyl-alcohol	36483-57-5
Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
Tribromo-styrene	61368-34-1
Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
Tris(2,4-Dibromo-phenyl) phosphate	49690-63-3
Tris(tribromo-neopentyl) phosphate	19186-97-1
Vinyl bromide	593-60-2
Other Brominated Flame Retardants	-

### 31) Polyvinyl chloride (PVC)

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

### 32) Phthalates

Substance name	CAS No
1,2-Benzenedicarboxylic acid diisodecyl ester (DIDP)	26761-40-0
Diethyl phthalate(DEP)	84-66-2
Dimethyl phthalate (DMP)	131-11-3
Dihexyl phthalate	84-75-3
1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6
1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4
1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0
N-pentyl-isopentylphthalate	776297-69-9
Diisopentylphthalate	605-50-5
Dipentyl phthalate (DPP)	131-18-0
Bis(2-methoxyethyl) phthalate	117-82-8

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	47

### 33) Antimony and compounds

Substance name	CAS No
Antimony Trioxide	1309-64-4
Antimony trisulfide	1345-04-6
Antimony trichloride	10025-91-9
Sodium antimonate	15432-85-6
Antimony pentoxide	1314-60-9
Antimony pentachloride	7647-18-9
Antimony(111) bromide	7789-61-9
Antimony(V) sulfide	1315-04-4
Antimony oxide	1327-33-9
Antimony tetroxide	1332-81-6
Antimony trifluoride	7783-56-4
Antimony	7440-36-0
Indium antimony	1312-41-0
Other Antimony and its compounds	-

### 34) Beryllium and compounds

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

### 35) Cobalt dichloride

Substance name	CAS No
Cobalt dichloride	7646-79-9

### 36-1) Chlorinated FlameRetardantsand its compounds

Substance name	CAS Number
BROMODICHLOROMETHANE	75-27-4
CHLORENDIC ANHYDRIDE	115-27-5
CHLORINATED PARAFFINS	63449-39-8
CHLOROENDRIC ACID	115-28-6
TETRACHLOROPHTHALIC ANHYDRIDE(TCPA)	117-08-8
CYCLOPROPANECARBOXYLIC ACID, 3-(2-CHLORO-3,3,3-TRIFLUORO-1-PROPENYL)-2,2-DIMETHYL-, (2-METHYL(1,1 -BIPHENYL)-3-YL)METHYL ESTER, (1.ALPHA.,3.ALPHA.(Z))-	82657-04-3
(S)-2-CHLOROPROPIONIC ACID	29617-66-1
1-(3,4-DICHLOROPHENYL)-3,3-DIMETHYLUREA	330-54-1
1H-BENZIMIDAZOLE, 2-(2-CHLOROPHENYL)-	3574-96-7
1H-ISOINDOLE-1,3(2H)-DIONE, 4,5,6,7-TETR	30125-47-4
1-PROPENE, HOMOPOLYMER, CHLORINATED	68442-33-1
2-(4-CHLOROBENZYL)-BENZIMIDAZOLE	5468-66-6
2-BUTANONE, 3-CHLORO-	4091-39-8
2-CHLORO-6-NITROANISOLE	80866-77-9
2-NAPHTHALENECARBOXAMIDE COMPOUND	5280-78-4
2-NAPHTHALENECARBOXAMIDE, 4-[(2,5-DICHLOROPHENYL)AZO]-3-HYDROXY-N-PHENYL-	6041-94-7

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	48

### 36-2) Chlorinated FlameRetardantsand its compounds

Substance name	CAS Number
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-DICHLOROPHENYL)AZO)-2-HYDROXY-3-NAPHTHOYL)AMINO)BENZENE	3905-19-9
2-NAPHTHALENECARBOXYLIC ACID, 4-((5-CHLORO-4-METHYL-2-SULFOPHENYL)AZO)-3-HYDROXY-	7585-41-3
2-NAPHTHALENECARBOXYLIC ACID, CHLORO-AZO	7023-61-2
4,5-DICHLORO-2-N-OCTYL-3-ISOTHIAZOLONE	64359-81-5
3-(4-CHLOROPHENYL)-1,1-DIMETHYLUREA	150-68-5
2-PYRAZOLIN-5-ONE, 4,4 -(3,3 -DICHLORO-4,4 -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-HYDROXY-3-(((2-	73263-37-3
C.I. 20055 CROMOPHTAL RED	68259-05-2
BUPIVACAINE HYDROCHLORIDE	14252-80-3
BUTANAMIDE, N,N -(3,3 -DIMETHYL(1,1 -BIPHENYL)-4,4 -DIYL)BIS(2-((2,4-ICHLOROPHENYL)AZO)-3-OXO-	5979-28-2
ACETOACETAMIDE, 2-((4-CHLORO-2-NITROPHENYL)AZO)-N-(2-OXO-5-BENZIMIDAZOLINYL)-	12236-62-3
2-BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL)AZO)-3-HYDROXY-N-(2-METHOXYPHENYL)-	13515-40-7
BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL)AZO)-N-(2-CHLOROPHENYL)-3-OXO-	6486-23-3
C.I. PIGMENT YELLOW 55	6358-37-8
2-BUTENAMIDE, N-(4-CHLORO-2,5-DIMETHOXYPHENYL)-2-((2,5-DIMETHOXY-4-((PHENYLAMINO)SULFONYL)PHENYL)AZO)-3-HYDROXY-	12225-18-2
BUTYL 2,4-DICHLOROPHENOXYACETATE	94-80-4
C.I. PIGMENT GREEN 7	1328-53-6
C.I. PIGMENT YELLOW 83	5567-15-7
CARBONIC DICHLORIDE	75-44-5
CHLORIDE	16887-00-6
CHLORINE	22537-15-1
CHLORINE	7782-50-5
CHLOROANILINE	27134-26-5
CHLORODIHYDROQUINOACRIDINEDIONE	3089-17-6
CHLORODIPHENYL	37324-23-5
CHLOROMETHYL PIVALATE (POM)	18997-19-8
CHLOROMETHYL THIAZOLONE	55965-84-9
CHLOROPENTANES, MIXTYRE OF ISOMERS	29656-63-1
CHLOROTOLURON	15545-48-9
CHROMATE(3-), BIS(5-CHLORO-3-((4,5-DIHYD	73324-05-7
CHROMATE, CHLOROPHENYL, AZO	31714-55-3



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	49

### 36-3) Chlorinated FlameRetardantsand its compounds

Substance name	CAS Number
COBALT CHLORIDE (COCL <sub>2</sub> ), HEXAHYDRATE	7791-13-1
COPPER PERCHLOROPHTHALOCYANINE	14832-14-5
COPPER MONOCHLOROPHTHALOCYANINE	12239-87-1
DIARYLANILIDE YELLOW	6358-85-6
DICHLORO-2,2-P-CYCLOPHANE	28804-46-8
DICHLORODIMETHYLSILANE REACTION PRODUCT WITH SILICA	68611-44-9
DICHLOROMETHANE	75-09-2
1,4:7,10-DIMETHANODIBENZO(A,E)CYCLOOCTENE	13560-89-9
DYE 26	76871-75-5
EPICHLOROHYDRIN	106-89-8
POLYOLEFINS SULFONIC ACIDS	68037-39-8
HYDROCHLORIC ACID	7647-01-0
ISOINDOLE-TETRACHLORO-QUINOLINYL	56731-19-2
1-(4-CHLORO-O-SULFO-5-TOLYLAZO)-2-NAPHTHOL, BARIUM SALT	5160-02-1
LITHIUM CHLORIDE (LICL)	7447-41-8
LITHIUM PERCHLORATE	7791-03-9
METHYLAMINE HYDROCHLORIDE	593-51-1
METHYLPHOSPHONIC DICHLORIDE	676-97-1
NICKEL CHLORIDE (NICL <sub>2</sub> )	7718-54-9
NICKEL CHLORIDE (NICL <sub>2</sub> ), HEXAHYDRATE	7791-20-0
PARA-DICHLOROBENZENE	106-46-7
2-(2 -HYDROXY-3 -TERT-BUTYL-5 -METHYLPHENYL)-5-CHLOROBENZOTRIAZOLE	3896-11-5
PHENOL, 2,4-DICHLORO-	120-83-2
PHOSPHONOUS DICHLORIDE, PHENYL-	644-97-3
PHOSPHOROUS TRICHLORIDE	7719-12-2
PHOSPHORUS OXYCHLORIDE	10025-87-3
POLYCHLOROPRENE	9010-98-4
3-(4-((2,6-DICHLORO-4-NITROPHENYL)AZO)-N-(2-HYDROXYETHYL)ANILINO)PROPIONITRILE, ACETATE (ESTER)	5261-31-4
PYRROLO(3,4-C)PYRROLE-1,4-DIONE COMPOUND	84632-65-5
CHLORINATED NATURAL RUBBER	9006-03-5
TRICHLOROVINYLSILICON	75-94-5
SODIUM CHLORIDE	7647-14-5
TETRACHLOROETHYLENE	127-18-4
TETRACHLORO-U-HYDROXY(U-METHACRYLATO-O:O)DICHROMIUM	15096-41-0
THIOSULFAN	115-29-7
TRICHLORO DI-P-XYLYLENE	29716-49-2
TRICHLOROETHYLENE	79-01-6
TRIETHYLAMINE HYDROCHLORIDE	554-68-7
TRIS(2-CHLOROETHYL)PHOSPHATE	115-96-8
TRIS(CHLOROETHYL) PHOSPHATE	29716-44-7
VINYL CHLORIDE	75-01-4
VINYL CHLORIDE COPOLYMER	25037-78-9
VINYL CHLORIDE-VINYL ACETATE COPOLYMERS	9003-22-9
ETHANAMINIUM, N-(6-(DIETHYLAMINO)-9-(2-(METHOXYCARBONYL)PHENYL)-3H-XANTHEN-3-YLIDENE)-N-ETHYL-, CHLORIDE	39393-39-0
BENZOIC ACID, 2-(6-(ETHYLAMINO)-3-(ETHYLIMINO)-2,7-DIMETHYL-3H-XANTHEN-9-YL)-	3068-39-1
ZINC CHLORIDE	7646-85-7

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	50

### 37) Volatile Organic Compounds (VoCs)

Substance name	CAS Number
Toluene	108-88-3
Benzene	71-43-2
Formaldehyde	50-00-0
Phosphine	7803-51-2

### 38-1) Pesticides

Substance name	CAS Number	Substance name	CAS Number
2,4,5-T	93-76-5	DDTs	50-29-3 789-02-6
2,4-D	94-75-7	Diazinon	333-41-5
Azinophosmethyl	86-50-0	Dichlorprop	120-36-2
Azinophosethyl	2642-71-9	Dicrotophos	141-66-2
Aldrin	309-00-2	Dieldrin	60-57-1
Bromophos-ethyl	4824-78-6	Dimethoate	60-51-5
Captafol	2425-06-01	Dinoseb and salts	88-85-7
Carbaryl	63-25-2	Endosulfan, $\alpha$	959-98-8
Chlordane	57-74-9	Endosulfan, $\beta$	33213-65-9
Chlordimeform	6164-98-3	Endrin	72-20-8
Chlorfenvinphos	470-90-6	Esfenvalerate	66230-04-4
Fenvalerate	51630-58-1	Malathion	121-75-5
Heptachlor	76-44-8	MCPA	94-74-6
Heptachlorepoxyde	1024-57-3	MCPB	94-81-5
Hexachlorobenzene	118-74-1	Mecoprop	93-65-2
Hexachlorcyclohexane, $\alpha$	319-84-6	Metamidophos	10265-92-6
Hexachlorcyclohexane, $\beta$	319-85-7	Methoxychlor	72-43-5
Hexachlorcyclohexane, $\delta$	319-86-8	Mirex	2385-85-5
Isodrine	465-73-6	Monocrotophos	6923-22-4
Kelevane	4234-79-1	Parathion	56-38-2
Kepone	143-50-0	Parathion-methyl	298-00-0
Lindan	58-89-9	Perthane	72-56-0
Coumaphos	56-72-4	Phosdrin/mevinphos	7786-34-7
Cyfluthrin	68359-37-5	Propethamphos	31218-83-4
Cyhalothrin	91465-08-6	Profenophos	41198-08-7
Cypermethrin	52315-07-8	Quinalphos	13593-03-8
DEF	78-48-8	Strobane	8001-50-1
Deltamethrin	52918-63-5	Telodrine	297-78-9
DDDs	53-19-0 72-54-8	Toxaphene	8001-35-2
DDEs	3424-82-6 72-55-9	Trifluralin	1582-09-8

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	51

### 38-2) Allergenic dyestuffs

Substance name	CAS Number
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
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

### 38-3) Carcinogenic dyestuffs

Substance name	CAS Number	Substance name	CAS Number
C.I. Acid Red 26	3761-53-3	C.I. Disperse Blue 1	2475-45-8
C.I. Basic Red 9	569-61-9	C.I. Disperse Orange 11	82-28-0
C.I. Basic Violet 14	632-99-5	C.I. Disperse Yellow 3	2832-40-8
C.I. Direct Black 38	1937-37-7	C.I. Disperse Orange 149	85136-74-9
C.I. Direct Blue 6	2602-46-2	C.I. Disperse Yellow 23	6250-23-3
C.I. Direct Red 28	573-58-0		

### 38-4) Trichlorophenol (TriCP)

Substance name	CAS Number	Substance name	CAS Number
2,3,4-Trichlorophenol	15950-66-0	2,4,5-Trichlorophenol	95-95-4
2,3,5-Trichlorophenol	933-78-8	2,4,6-Trichlorophenol	88-06-2
2,3,6-Trichlorophenol	933-75-5	3,4,5-Trichlorophenol	609-19-8

### 38-5) Tetrachlorophenol (TeCP)

Substance name	CAS Number
2,3,5,6-Tetrachlorophenol	935-95-5
2,3,4,6-Tetrachlorophenol	58-90-2
2,3,4,5-Tetrachlorophenol	4901-51-3

### 38-6) Chlorinated benzenes, chlorinated toluenes

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

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	52

### 38-7) Alkylphenols(AP)

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

### 38-8) Alkylphenol ethoxylates(APEO)

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

### # Annex 3. Examples of substances and its compounds (Others)

Category Code	Substance name	CAS No
Radioactive Substances	Uranium-238	7440-61-1
	Radon	10043-92-2
	Americium-241	14596-10-2
	Thorium-232	7440-29-1
	Cesium (Radioactive Isotopes only)	7440-46-2 (Cs-137 010045-97-3)
	Strontium (Radioactive Isotopes only)	7440-29-6 (Sr-90 10098-97-2)
	Other radioactive substances	-
MCCP	Medium-chain chlorinated paraffins, C14-C17	85535-85-9
Triclosan	Triclosan	3380-34-5
PFRs (Phosphate flame retardants)	Triphenyl phosphate(TPhP)	115-86-6

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	53

#### # Annex-4 : Substances in EU SVHC candidate list

##### - EU SVHC candidate list

No	Class		Date of inclusion	Substance name	CAS No
SVHC 001	Class II	Arsenic	2008.10.28	Triethyl arsenate	15606-95-8
SVHC 002	Class I	Cr+6	2008.10.28	Sodium dichromate	10588-01-9, 7789-12-0
SVHC 003	Class I	Pb	2008.10.28	Lead hydrogen arsenate	7784-40-9
SVHC 004	Class II	HBCDD	2008.10.28	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified:	-
				Beta-hexabromocyclododecane	134237-51-7
				Alpha-hexabromocyclododecane	134237-50-6
				Gamma-hexabromocyclododecane	134237-52-8
				Hexabromocyclododecane	25637-99-4
SVHC 005	Class I	DBP	2008.10.28	1,2,5,6,9,10-hexabromocyclododecane	3194-55-6
SVHC 006	Class I	DBP	2008.10.28	Dibutyl phthalate (DBP)	84-74-2
SVHC 007	Class II	Arsenic	2008.10.28	Diarsenic trioxide	1327-53-3
SVHC 008	Class II	Arsenic	2008.10.28	Diarsenic pentaoxide	1303-28-2
SVHC 009	Class III	Cobalt dichloride	2008.10.28	Cobalt dichloride	7646-79-9
SVHC 010	Class II	TBTs, TPTs, TBTO	2008.10.28	Bis(tributyltin)oxide (TBTO)	56-35-9
SVHC 011	Class I	DEHP	2008.10.28	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7
SVHC 012	Class I	BBP	2008.10.28	Benzyl butyl phthalate (BBP)	85-68-7
SVHC 013	Class II	PAHs	2008.10.28	Anthracene	120-12-7
SVHC 014	Class II	SCCP	2008.10.28	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8
SVHC 015	REACH	SVHC	2008.10.28	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2
SVHC 016	Class II	Azo	2008.10.28	4,4'- Diaminodiphenylmethane (MDA)	101-77-9
SVHC 017	Class III	CFRs	2010.01.13	Tris(2-chloroethyl)phosphate	115-96-8
SVHC 018	REACH	SVHC	2010.01.13	Pitch, coal tar, high temp.	65996-93-2
SVHC 019	Class I	Pb	2010.01.13	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
SVHC 020	Class I	Pb	2010.01.13	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
SVHC 021	Class I	Pb	2010.01.13	Lead chromate	7758-97-6
SVHC 022	Class I	DIBP	2010.01.13	Diisobutyl phthalate	84-69-5
SVHC 023	Class II	PAHs	2010.01.13	Anthracene oil, anthracene-low	90640-82-7
SVHC 024	Class II	PAHs	2010.01.13	Anthracene oil, anthracene paste, distn. lights	91995-17-4
SVHC 025	Class II	PAHs	2010.01.13	Anthracene oil, anthracene paste, anthracene fraction	91995-15-2
SVHC 026	Class II	PAHs	2010.01.13	Anthracene oil, anthracene paste	90640-81-6

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	54

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 026	Class II	PAHs	2010.01.13	Anthracene oil A complex combination of polycyclic aromatic hydrocarbons obtained from coal tar having an approximate distillation range of 300°C to 400°C (572°F to 752°F). Composed primarily of phenanthrene, anthracene and carbazole.	90640-80-5
SVHC 027	REACH	SVHC	2010.01.13	2,4-Dinitrotoluene	121-14-2
SVHC 028	REACH	SVHC	2010.03.30	Acrylamide	79-06-1
SVHC 029	Class III	CFRs	2010.06.18	Trichloroethylene	79-01-6
SVHC 030	REACH	SVHC	2010.06.18	Tetraboron disodium heptaoxide, hydrate	12267-73-1
SVHC 031	Class I	Cr+6	2010.06.18	Sodium chromate	7775-11-3
SVHC 032	Class I	Cr+6	2010.06.18	Potassium dichromate	7778-50-9
SVHC 033	Class I	Cr+6	2010.06.18	Potassium chromate	7789-00-6
SVHC 034	REACH	SVHC	2010.06.18	Disodium tetraborate, anhydrous	1303-96-4, 1330-43-4, 12179-04-3
SVHC 035	REACH	SVHC	2010.06.18	Boric acid	-
				Boric acid, crude natural	11113-50-1
				Boric acid	10043-35-3
SVHC 036	Class I	Cr+6	2010.06.18	Ammonium dichromate	7789-09-5
SVHC 037	REACH	SVHC	2010.12.15	Cobalt(II) sulphate	10124-43-3
SVHC 038	REACH	SVHC	2010.12.15	Cobalt(II) dinitrate	10141-05-6
SVHC 039	REACH	SVHC	2010.12.15	Cobalt(II) diacetate	71-48-7
SVHC 040	REACH	SVHC	2010.12.15	Cobalt(II) carbonate	513-79-1
SVHC 041	Class I	Cr+6	2010.12.15	Chromium trioxide	1333-82-0
SVHC 042	Class I	Cr+6	2010.12.15	Acids generated from chromium trioxide and their oligomers	-
				Chromic acid	7738-94-5, 13530-68-2
				Dichromic acid	7738-94-5, 13530-68-2
				Oligomers of chromic acid and dichromic acid	-
SVHC 043	REACH	SVHC	2010.12.15	2-Methoxyethanol	109-86-4
SVHC 044	REACH	SVHC	2010.12.15	2-Ethoxyethanol	110-80-5
SVHC 045	Class I	Cr+6	2011.06.20	Strontium chromate	7789-06-2
SVHC 046	REACH	SVHC	2011.06.20	Hydrazine	302-01-2, 7803-57-8
SVHC 047	REACH	SVHC	2011.06.20	2-Ethoxyethyl acetate	111-15-9
SVHC 048	REACH	SVHC	2011.06.20	1-Methyl-2-pyrrolidone	872-50-4
SVHC 049	Class III	Phthalate	2011.06.20	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4
SVHC 050	Class III	Phthalate	2011.06.20	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	71888-89-6
SVHC 051	REACH	SVHC	2011.06.20	1,2,3-Trichloropropane	96-18-4

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	55

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 052	REACH	SVHC	2011.12.19	Zirconia Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium, silicon and zirconium are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm). c) alkaline oxide and alkali earth oxide (Na <sub>2</sub> O+K <sub>2</sub> O+CaO+MgO+BaO) content less or equal to 18% by weight	-
SVHC 053	Class I	Pb	2011.12.19	Trilead diarsenate	3687-31-8
SVHC 054	REACH	SVHC	2011.12.19	Potassium hydroxyoctaoxodizincatedichromate	11103-86-9
SVHC 055	REACH	SVHC	2011.12.19	Phenolphthalein	77-09-8
SVHC 056	REACH	SVHC	2011.12.19	Pentazinc chromate octahydroxide	49663-84-5
SVHC 057	REACH	SVHC	2011.12.19	N,N-dimethylacetamide	127-19-5
SVHC 058	Class I	Pb	2011.12.19	Lead styphnate	15245-44-0
SVHC 059	Class I	Pb	2011.12.19	Lead dipicrate	6477-64-1
SVHC 060	Class I	Pb	2011.12.19	Lead diazide, Lead azide	13424-46-9
SVHC 061	Class II	Formaldehyde	2011.12.19	Formaldehyde, oligomeric reaction products with aniline	25214-70-4
SVHC 062	REACH	SVHC	2011.12.19	Dichromium tris(chromate)	24613-89-6
SVHC 063	Class II	Arsenic	2011.12.19	Calcium arsenate	7778-44-1
SVHC 064	Class III	Phthalate	2011.12.19	Bis(2-methoxyethyl) phthalate	117-82-8
SVHC 065	REACH	SVHC	2011.12.19	Bis(2-methoxyethyl) ether	111-96-6
SVHC 066	Class II	Arsenic	2011.12.19	Arsenic acid	7778-39-4

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	56

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 067	REACH	SVHC	2011.12.19	Aluminosilicate Refractory Ceramic Fibres are fibres covered by index number 650-017-00-8 in Annex VI, part 3, table 3.1 of Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, and fulfil the three following conditions: a) oxides of aluminium and silicon are the main components present (in the fibres) within variable concentration ranges b) fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm) c) alkaline oxide and alkali earth oxide (Na <sub>2</sub> O+K <sub>2</sub> O+CaO+MgO+BaO) content less or equal to 18% by weight	-
SVHC 068	REACH	SVHC	2011.12.19	4-(1,1,3,3-tetramethylbutyl)phenol	140-66-9
SVHC 069	Class II	Azo	2011.12.19	2-Methoxyaniline; o-Anisidine	90-04-0
SVHC 070	Class II	Azo	2011.12.19	2,2'-dichloro-4,4'-methylenedianiline	101-14-4
SVHC 071	REACH	SVHC	2011.12.19	1,2-dichloroethane	107-06-2
SVHC 072	REACH	SVHC	2012.06.18	α,α-Bis[4-(dimethylamino)phenyl]-4 (phenylamino)naphthalene-1-methanol (C.I. Solvent Blue 4) with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	6786-83-0
SVHC 073	REACH	SVHC	2012.06.18	N,N,N',N'-tetramethyl-4,4'-methylenedianiline (Michler's base)	101-61-1
SVHC 074	Class I	Pb	2012.06.18	Lead(II) bis(methanesulfonate)	17570-76-2
SVHC 075	REACH	SVHC	2012.06.18	Formamide	75-12-7
SVHC 076	REACH	SVHC	2012.06.18	Diboron trioxide	1303-86-2
SVHC 077	REACH	SVHC	2012.06.18	[4-[[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene] dimethylammonium chloride (C.I. Basic Blue 26) with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	2580-56-5
SVHC 078	REACH	SVHC	2012.06.18	[4-[4,4'-bis(dimethylamino) benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride (C.I. Basic Violet 3) with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	548-62-9
SVHC 079	REACH	SVHC	2012.06.18	4,4'-bis(dimethylamino)benzophenone (Michler's ketone)	90-94-8
SVHC 080	REACH	SVHC	2012.06.18	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol with ≥ 0.1% of Michler's ketone (EC No. 202-027-5) or Michler's base (EC No. 202-959-2)	561-41-1
SVHC 081	REACH	SVHC	2012.06.18	1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione (β-TGIC)	59653-74-6



STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	57

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 082	REACH	SVHC	2012.06.18	1,3,5-Tris(oxiran-2-ylmethyl)-1,3,5-triazinane-2,4,6-trione (TGIC)	2451-62-9
SVHC 083	REACH	SVHC	2012.06.18	1,2-dimethoxyethane; ethylene glycol dimethyl ether (EGDME)	110-71-4
SVHC 084	REACH	SVHC	2012.06.18	1,2-bis(2-methoxyethoxy)ethane (TEGDME; triglyme)	112-49-2
SVHC 085	Class I	Pb	2012.12.19	Trilead dioxide phosphonate	12141-20-7
SVHC 086	Class I	Pb	2012.12.19	Trilead bis(carbonate)dihydroxide	1319-46-6
SVHC 087	REACH	SVHC	2012.12.19	Tricosafuorododecanoic acid	307-55-1
SVHC 088	Class I	Pb	2012.12.19	Tetralead trioxide sulphate	12202-17-4
SVHC 089	Class I	Pb	2012.12.19	Tetraethyllead	78-00-2
SVHC 090	Class I	Pb	2012.12.19	Sulfurous acid, lead salt, dibasic	62229-08-7
SVHC 091	Class I	Pb	2012.12.19	Silicic acid, lead salt	11120-22-2
SVHC 092	Class I	Pb	2012.12.19	Silicic acid (H <sub>2</sub> Si <sub>2</sub> O <sub>5</sub> ), 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
SVHC 093	Class I	Pb	2012.12.19	Pyrochlore, antimony lead yellow This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77588.	8012-00-8
SVHC 094	Class I	Pb	2012.12.19	Pentalead tetraoxide sulphate	12065-90-6
SVHC 095	REACH	SVHC	2012.12.19	Pentacosafuorotridecanoic acid	72629-94-8
SVHC 096	Class I	Pb	2012.12.19	Orange lead (lead tetroxide)	1314-41-6
SVHC 097	Class II	Azo	2012.12.19	o-Toluidine	95-53-4
SVHC 098	Class II	Azo	2012.12.19	o-aminoazotoluene	97-56-3
SVHC 099	Class III	Phthalate	2012.12.19	N-pentyl-isopentylphthalate	776297-69-9
SVHC 100	REACH	SVHC	2012.12.19	N-methylacetamide	79-16-3
SVHC 101	REACH	SVHC	2012.12.19	N,N-dimethylformamide	68-12-2
SVHC 102	REACH	SVHC	2012.12.19	Methyloxirane (Propylene oxide)	75-56-9
SVHC 103	REACH	SVHC	2012.12.19	Methoxyacetic acid	625-45-6
SVHC 104	Class I	Pb	2012.12.19	Lead titanium zirconium oxide	12626-81-2
SVHC 105	Class I	Pb	2012.12.19	Lead titanium trioxide	12060-00-3
SVHC 106	Class I	Pb	2012.12.19	Lead oxide sulfate	12036-76-9
SVHC 107	Class I	Pb	2012.12.19	Lead monoxide (lead oxide)	1317-36-8
SVHC 108	Class I	Pb	2012.12.19	Lead dinitrate	10099-74-8
SVHC 109	Class I	Pb	2012.12.19	Lead cyanamidate	20837-86-9
SVHC 110	Class I	Pb	2012.12.19	Lead bis(tetrafluoroborate)	13814-96-5

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	58

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 111	REACH	SVHC	2012.12.19	Hexahydromethylphthalic anhydride including cis- and trans- stereo isomeric forms and all possible combinations of the isomers	-
				Hexahydro-4-methylphthalic anhydride	19438-60-9
				Hexahydromethylphthalic anhydride	25550-51-0
				Hexahydro-1-methylphthalic anhydride	48122-14-1
				Hexahydro-3-methylphthalic anhydride	57110-29-9
SVHC 112	REACH	SVHC	2012.12.19	Heptacosafuorotetradecanoic acid	376-06-7
SVHC 113	REACH	SVHC	2012.12.19	Henicosafuoroundecanoic acid	2058-94-8
SVHC 114	REACH	SVHC	2012.12.19	Furan	110-00-9
SVHC 115	Class I	Pb	2012.12.19	Fatty acids, C16-18, lead salts	91031-62-8
SVHC 116	Class I	Pb	2012.12.19	Dioxobis(stearato)trilead	12578-12-0
SVHC 117	REACH	SVHC	2012.12.19	Dinoseb (6-sec-butyl-2,4-dinitrophenol)	88-85-7
SVHC 118	REACH	SVHC	2012.12.19	Dimethyl sulphate	77-78-1
SVHC 119	Class III	Phthalate	2012.12.19	Diisopentylphthalate	605-50-5
SVHC 120	REACH	SVHC	2012.12.19	Diethyl sulphate	64-67-5
SVHC 121	Class II	DBT	2012.12.19	Dibutyltin dichloride (DBTC)	683-18-1
SVHC 122	REACH	SVHC	2012.12.19	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide)) (ADCA)	123-77-3
SVHC 123	REACH	SVHC	2012.12.19	Cyclohexane-1,2-dicarboxylic anhydride all possible combinations of the cis- and trans-isomers	-
				is-cyclohexane-1,2-dicarboxylic anhydride	13149-00-3
				Cyclohexane-1,2-dicarboxylic anhydride	85-42-7
				trans-cyclohexane-1,2-dicarboxylic anhydride	14166-21-3
SVHC 124	Class I	PBDEs	2012.12.19	Bis(pentabromophenyl) ether (decabromodiphenyl ether) (DecaBDE)	1163-19-5
SVHC 125	Class II	Azo	2012.12.19	Biphenyl-4-ylamine	92-67-1
SVHC 126	Class I	Pb	2012.12.19	Acetic acid, lead salt, basic	51404-69-4
SVHC 127	Class I	Pb	2012.12.19	[Phthalato(2-)]dioxotrilead	69011-06-9
SVHC 128	Class II	Azo	2012.12.19	6-methoxy-m-toluidine (p-cresidine)	120-71-8
SVHC 129	REACH	SVHC	2012.12.19	4-Nonylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-
SVHC 130	Class II	Azo	2012.12.19	4-methyl-m-phenylenediamine (toluene-2,4-diamine)	95-80-7
SVHC 131	Class II	Azo	2012.12.19	4-Aminoazobenzene	60-09-3
SVHC 132	REACH	SVHC	2012.12.19	4-(1,1,3,3-tetramethylbutyl)phenol, ethoxylated [covering well-defined substances and UVCB substances, polymers and homologues]	-
SVHC 133	Class II	Azo	2012.12.19	4,4'-oxydianiline and its salts	-
				4,4'-oxydianiline	101-80-4

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	59

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 134	Class II	Azo	2012.12.19	4,4'-methylenedi-o-toluidine	838-88-0
SVHC 135	REACH	SVHC	2012.12.19	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2
SVHC 136	Class II	ODS	2012.12.19	1-bromopropane (n-propyl bromide) (C3H7Br)	106-94-5
SVHC 137	REACH	SVHC	2012.12.19	1,2-Diethoxyethane	629-14-1
SVHC 138	Class III	Phthalate	2012.12.19	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0
SVHC 139	Class II	PFOA	2013.06.20	Pentadecafluorooctanoic acid (PFOA)	335-67-1
SVHC 140	Class III	Phthalate	2013.06.20	Dipentyl phthalate (DPP)	131-18-0
SVHC 141	Class I	Cd	2013.06.20	Cadmium oxide	1306-19-0
SVHC 142	Class I	Cd	2013.06.20	Cadmium	7440-43-9
SVHC 143	Class II	PFOA	2013.06.20	Ammonium pentadecafluorooctanoate (APFO)	3825-26-1
SVHC 144	REACH	SVHC	2013.06.20	4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB- and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	-
SVHC 145	REACH	SVHC	2013.12.13	Trixylyl phosphate	25155-23-1
SVHC 146	Class I	Pb	2013.12.13	Lead di(acetate)	301-04-2
SVHC 147	REACH	SVHC	2013.12.13	Imidazolidine-2-thione (2-imidazoline-2-thiol)	96-45-7
SVHC 148	REACH	SVHC	2013.12.13	Disodium 3,3'-[[1,1'-biphenyl]-4,4'-diylbis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0
SVHC 149	REACH	SVHC	2013.12.13	Disodium 4-amino-3-[[4'-[(2,4-diaminophenyl)azo][1,1'-biphenyl]-4-yl]azo] -5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Direct Black 38)	1937-37-7
SVHC 150	Class III	Phthalate	2013.12.13	Dihexyl phthalate	84-75-3
SVHC 151	Class I	Cd	2013.12.13	Cadmium sulphide	1306-23-6
SVHC 152	REACH	SVHC	2014.06.16	Sodium peroxometaborate	7632-04-4
SVHC 153	REACH	SVHC	2014.06.16	Sodium perborate; perboric acid, sodium salt	-
				Sodium perborate	15120-21-5
				Perboric acid, sodium salt	11138-47-9
SVHC 154	Class I	Cd	2014.06.16	Cadmium chloride	10108-64-2
SVHC 155	REACH	SVHC	2014.06.16	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	60

**- EU SVHC candidate list**

No	Class		Date of inclusion	Substance name	CAS No
SVHC 156	REACH	SVHC	2014.12.17	reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-
SVHC 157	Class I	Cd	2014.12.17	Cadmium sulphate	10124-36-4, 31119-53-6
SVHC 158	Class I	Cd	2014.12.17	Cadmium fluoride	7790-79-6
SVHC 159	Class II	DOT	2014.12.17	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
SVHC 160	REACH	SVHC	2014.12.17	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7
SVHC 161	REACH	SVHC	2014.12.17	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1
SVHC 162	REACH	SVHC	2015.06.15	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
				5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
				5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane	-
SVHC 163	REACH	SVHC	2015.06.15	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with ≥ 0.3% of dihexyl phthalate (EC No. 201-559-5)	-
				1,2-Benzenedicarboxylic acid, di-C6-10-alkyl esters	68515-51-5
				1,2-Benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters	68648-93-1
SVHC 164	REACH	SVHC	2015.12.17	Perfluorononan-1-oic-acid and its sodium and ammonium salts	-
				Ammonium salts of perfluorononan-1-oic-acid	4149-60-4, -
				Perfluorononan-1-oic-acid	375-95-1
				Sodium salts of perfluorononan-1-oic-acid	21049-39-8, -
SVHC 165	REACH	SVHC	2015.12.17	Nitrobenzene	98-95-3
SVHC 166	REACH	SVHC	2015.12.17	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3
SVHC 167	REACH	SVHC	2015.12.17	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1
SVHC 168	REACH	SVHC	2015.12.17	1,3-propanesultone	1120-71-4
SVHC 169	Class II	PAHs	2016.06.20	Benzo[a]pyren	50-32-8

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	61

**# Annex-5 : Submission format for Eco-partner certification (1/3)**

**Letter of Warranty and Representation (“Letter”)**

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

From: \_\_\_\_\_ (“Company”)

1. The “Company hereby warrants and represents as follows:
  - A. Company complies with all relevant international regulations concerning the substances with environmental impacts.
  - B. Company complies with the Samsung Electronics Standards for Control of Substances with Environmental Impacts within Products “Samsung Environmental Standards, 0QA-2049” in controlling environmentally hazardous substances.
  - C. The documents and data sheets on the substances with environmental impacts contained in Company’s supplies including, without limitation, products, parts, components, raw materials and packaging materials, are accurate and truthful.
  
2. Company agrees to defend, hold harmless, and indemnify SEC from any claim arising out of or related to Company’s failure to comply with the above warranties and representations including, without limitation, all counsel fees and legal costs, judgments, orders, awards, and/or any damages arising out of and/or related to any such claim or 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:

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	62

# Annex-5 : Submission format for Eco-partner certification (2/3)

### **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 :

STANDARD	Standards for Control of Substances used in products	Registration No.	Revision No.	Page
		0QA-2049	18	63

[#Annex-5 : Submission format for Eco-partner certification \(3/3\)](#)

### Declaration of Non-Use of 4 Phthalates

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

From: \_\_\_\_\_ ("Company")

The Company hereby declares that all parts the Company deliver to Samsung Electronics do not contain 4 Phthalates restricted under the EU RoHS Directive 2011/65/EC.

- Target Substances : 4 Phthalates

- . Bis (2-ethylhexyl) phthalate / Di-2-ethylhexyl phthalate ( DEHP )
- . Butyl benzyl phthalate ( BBP )
- . Dibutyl phthalate ( DBP )
- . Diisobutyl phthalate ( DIBP )

Covered parts of this declaration are all parts provided to SEC.

The undersigned is an authorized representative of the Company.

Signature :

Name :

Position :

Date :

Company Address :