SAMSUNG

# Samsung Electronics
# Standards for Control of Substances used in products

( SEC Registration No. 0QA-2049 )

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Samsung Electronics Co., Ltd

## Contents

# Chapter 1 General Provision

**Article 1 (Preface)**

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

**Article 2 (Purpose)**

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

**Article 3 (Scope)**

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

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

**Articles 4 (Definitions)**

1. Substances concerning Product production
   Substances which are restricted and controlled by SEC, due to their negative effects on the environment and the health

2. Classification of Substances concerning Product production

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

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

3. Exemptions

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

4. Homogeneous materials

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

5. Threshold Limit

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

6. Precision Analysis

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

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

* CV-AAS: Cold Vapor-Atomic Absorption Spectroscopy
* AFS: Atomic fluorescence Spectrometry
* UV-VIS: Ultraviolet-Visible Spectroscopy
* C-IC: Combustion Ion Chromatography
* HPLC : High Pressure Liquid Chromatography (Ultra Violet detection)
* DMA : Direct Mercury Analyzer
* ICP: Inductively Coupled Plasma
* GC/MS: Gas Chromatography/Mass Spectrometry
* IAMS : Ion Attachment Mass Spectrometry

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

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

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

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

1. The company manages Substances concerning Product Environment by classifying them as either Restricted Substances and Potentially Risk Substances. The substances are restricted from application date. Standards and methods of control are regularly revised.

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

3. The suppliers submit an approval sheet with the contents of Substance concerning Product Environment of the new supplies on in written document to the e-CIMS(Environment Chemical Integrated System for Partners) and comply with the Standards for Control of Substances concerning Product Environment.

Note: RoHS Substances shall be confirmed to comply with the threshold limit, by the precision analysis data. Other restricted substances shall not be confirmed by precision analysis data. When Samsung Electronics requires, suppliers shall provide precision analysis data to Samsung Electronics and prove to comply with the threshold limits.

# Chapter 2 Standard for Control of Substances concerning Product production

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

1. This standard applies to the unit of homogeneous materials in parts of being supplied by suppliers.
   - Homogeneous material which cannot be mechanically dissembled further into single materials or articles.

2. List of Control of substances in products

### 1) Restricted Substances

| Susbtance | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|
| Cadmium and its compounds (Cd) | All parts | Organic | 5ppm | Jan.2005 | ICP<br>AAS<br>AFS | IEC 62321-5:2013 | pigment, anti-corrosio<br>electric and electronic<br>optical material,<br>PVC, stabilizer,<br>plating etc | EU RoHS/Packaging/Battery<br>OSPAR Priority Chemicals;<br>Korea RoHS; China RoHS;<br>Japan J-MOSS; US/CA SB-20/50;<br>California Proposition 65 |
| | | Inorganic | 80ppm | | | | | |
| Lead and its compounds (Pb) | All parts | Organic | 100ppm | Jan.2005 | ICP<br>AAS | IEC 62321-5:2013 | hardener, stabilizer,<br>additives, pigment,<br>paint, lubricant<br>plating, metal alloy | EU RoHS/Packaging/Battery<br>California Proposition 65;<br>OSPAR Priority Chemicals;<br>Korea RoHS;China RoHS;<br>Japan J-MOSS; US/CA SB-20/50;<br>US CPSC Public Law 110-314 |
| | | Inorganic | 800ppm | | | | | |
| | Accessible parts of children's product *1) *2) | Paint Coating | 90ppm | Sep.2015 | AFS | ASTM F963-17<br>EN 71-Part3<br>CPSC-CH-E1003-09.1 | | |
| | | Others | 100ppm | | | ASTM F963-17<br>EN 71-Part3<br>CPSC-CH-E1001-08.1<br>CPSC-CH-E1002-08.1 | | |
| Mercury and its compounds (Hg) | All parts | | 800ppm | Jan.2005 | ICP<br>CV-AAS<br>AFS<br>DMA | IEC 62321-4:2013 | fluorescent bulb,<br>pigment,<br>anti-corrosion,<br>antibacterial<br>treatment | EU RoHS/Packaging/Battery<br>OSPAR Priority Chemicals;<br>Korea RoHS; China RoHS;<br>Japan J-MOSS; US/CA SB-20/50;<br>California Proposition 65 |

| Susbtance | | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|---|
| Hexavalent chromium and its compounds (Cr6+) | | All parts | | 800ppm | Jan.2005 | IC<br>UV/VIS | Metal coating:<br>IEC 62321-7-1:2015<br>Polymer:<br>IEC 62321-7-2:2017<br>IEC 6231-5 | pigment, paint, ink, catalyst, anti-corrosion surface treatment, chromate treatment | EU RoHS/Packaging;<br>OSPAR Priority Chemicals;<br>China RoHS; Korea RoHS;<br>Japan J-MOSS; US/CA SB-20/50;<br>California Proposition 65 |
| | | Genuine leathers contact with skin | | 3ppm | May.2015 | | ISO 17075 | | |
| | | Wearables<br>skin contact *3) | N,S Fiber<br>Polymer *4) | 0.5ppm | Mar.2020 | | ISO 105-E04 | | Samsung Voluntarily Reduction |
| PBBs<br>PBDEs<br>*5) | | All parts | Organic | 900ppm | Feb.2005 | GC/MS<br>HPLC/UV<br>IAMS | IEC 62321-6:2015 | flame retardant | EU RoHS; Japan J-MOSS;<br>OSPAR Priority Chemicals;<br>China RoHS; Korea RoHS;<br>California Proposition 65 |
| Phthalates (18) | BBP, DBP, DEHP | All parts | Organic | 900ppm | Jul.2018 | GC/MS<br>LC/MS<br>IAMS<br>Py-GC/MS | IEC 62321-8:2017<br>EN 14372:2004 | plasticizer, coating adhesive, artificial leather | EU RoHS; EU REACH;<br>California Proposition 65 |
| | DIBP | Medical equipment | | | Jul.2020 | | | | |
| | DINP, DIDP, DnOP, DnHP, DMEP, DIPP nPIPP, DnPP, DCHP | Accessible parts of children's product *1) | Organic | 900ppm individually | Sep.2015 | | CPSC-CH-C1001-09.3<br>ASTM F963-17<br>EN 71-Part3 | | EU REACH;<br>California Proposition 65<br>US CPSC Public Law 110-314 |
| | | All parts | | 900ppm individually | Jul.2019 | | IEC 62321-8 | | |
| | DEP, DMP, DIHP DHNUP, DPP | Mobile *6)<br>NotePC<br>*Excl. powercable/adapter<br>TV/Mon Iner Cable<br>*Excl. panel | Organic | 900ppm individually | Jan.2013 | | IEC 62321-8:2017<br>ASTM D3421-75<br>EN 14372:2004<br>US EPA 3540C<br>US CPSCCH-C1001-09.1<br>EPA 0506<br>KSM 1991 etc | | Samsung Voluntarily Reduction |
| | | AI&IoT<br>*Exp. PVC safety required | | | Jan.2019 | | | | |
| | Total phthalates(∑18) | Wearables<br>skin contact *3) | N,S Fiber<br>N. Leather<br>Polymer *4) | 1000ppm total | Mar.2020 | | | | Samsung Voluntarily Reduction |
| | DEHP, DBP, BBP | Polymer product's skin contact *7) (e.g. HHP case, bidget) | | 1000ppm total | Oct.2020 | | | | Korea Safety Law for Eletronics |
| PCBs, PCTs, PCNs | | All parts | | No intentional use | May.2004 | GC/MS<br>GC/ECD | EPA 8082/1668<br>KS C 2375, DIN EN 61619 | insulation oil, lubricant oil, etc | Stockholm C.; EU No 850/2004;<br>EU REACH; Japan Chemical Law |

| Susbtance | | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|---|
| ODS/ Greenhouse Gas | CFCs,HCFCs,Halons | Refrigerant, foam blowing agent, ex | | No intentional use | May.2004 | GC/ECD | EPA 8021B/524.1<br>EPA-524.2 etc | Refrigerant, foam blowing agent | Montreal Protocol;<br>EU EC No.2037/2000<br>EU EC 1005/2009;<br>US Clean Air Act; EU 517/2014 |
| | HFCs(GWP>150) | Refrigerant in refrigerator for EU | | | Jan.2015 | | | | |
| | HFCs,PFCs, SF6 | Refrigerant in refrigerator, foam blowing agent for Austria, Swiss, Denmark | | | Jan.2002 | | | | |
| Asbestos and its compounds | | All parts | | No intentional use | May.2004 | TEM, SEM, Phase Contrast M X-Ray Diffract, Thermal analysis | EPA-0435; JIA-A 1481<br>NIOSH NMAM #7400<br>OSHA ID-160<br>HSE MDHS 39/4 etc | insulator, filler, abrasive, pigment, paint, talc etc | EU REACH |
| Formaldehydes *8) | | All parts | | No intentional use | May.2004 | HPLC<br>UV/VIS<br>Photoelectric colorimeter | ASTM D6007-2<br>E1333-96; EPA TO-11A<br>ISO 16000-3<br>KS M ISO 16000-3<br>KS M 1998-1~4 etc | adhesive, antiseptic solution, preservative etc | Austria - BGB I 1990/194;<br>US CA Code of Regulation |
| | | Fiber | | 0.1ppm | Apr.2011 | | | | |
| | | Wearables skin contact *3) | N,S Fiber N. Leather Polymer *4) | 75ppm | Sep.2015 | | Japan Law 112 | | Japan Law 112 |
| SCCPs (alkane 10~13 Carbon chain) | | All parts | | 1000ppm | Apr.2011 | GC/MS<br>GC/ECD | EPA 3540C/3550C<br>EPA 8081B/8270D etc | plasticizer for PVC, flame retardant etc | EU REACH |
| Azo colorants | | Fiber, leather for direct and prolonged skin contact (e.g. belt, strap etc) | | 30ppm | May.2004 | GC/MS<br>GC/MSD<br>HPLC | EN 14362-1~2<br>CEN ISO/TS 17234 etc | pigment, dyes, colorants etc | EU REACH |
| | | Wearables skin contact *3) | N,S Fiber N. Leather Polymer *4) | | Mar.2020 | | | | |
| Nickel and its compounds (Ni) | | Resurfacing & external metal for direct & prolonged skin contact (e.g. external antenna/case, belt, strap, earphone etc) | | 0.5μg/㎠/week *9) | May.2004 | ICP/OES | EN 1811:2011+A1:2015<br>(3 Samples) | pigment, paint, optical thin film, conductive, surface treatment etc | EU REACH |
| | | Wearables skin contact *3) | N,S Fiber N. Leather Polymer *4) | | Mar.2020 | | | | |
| Organic tin compounds | TBT,TPT,DBT | All parts | | 1000ppm individually | Jan.2012 | GC/MS<br>GC-FPD | EPA 0280<br>DIN 38407 etc | stabilizer, antioxidant, antimicrobial, preservative etc | EU REG. NO. 276/2010;<br>EU REACH |
| | DOT | Fiber for skin contact(e.g. pouches) Child protection products | | | | | | | |

| Susbtance | | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|---|
| Arsenic compounds and its compounds (As) | | Wooden, submerged parts | | No intentional use | May.2004 | ICP AAS | EPA 3050B/3051/3052 EPA 200.8/6020/6010B ISO 6101-2 etc | pigment, paint, dye, flame retardants etc | EU REACH |
| | | Wearables skin contact *3) | N,S Fiber N. Leather Polymer *4) | | Mar.2020 | | | | |
| PFOSs *10) | | All parts | | 1000ppm | May.2008 | LC/MS | US EPA 3540C (Acid/Metal Salt/Amide) | cleaner, Insulating oil, flux, pigment, PTFE etc | Stockholm Convention EU No 757/2010; EU (EC) No 552/2009 |
| | | N,S fiber & coated materials N. Leather | | 1 ㎍/㎡ | | | | | |
| DMF | | All parts | | 0.1ppm | May.2009 | GC/MS | EPA-3540C | Silica-gel, PU wood etc | EU 2009/251/EC |
| PCP | | N.S fiber & N. leather | | 5ppm | Sep.2013 | GC/MS | DIN 53313; US EPA 8270 etc | preservatives etc | Norway Product Regulation; EU REACH |
| | | Wearables skin contact *3) | N,S Fiber N. Leather Polymer *4) | 0.5ppm | Mar.2020 | | | | |
| TeCP | | Wearables skin contact *3) | N,S Fiber N. Leather Polymer *4) | 5ppm total | Mar.2020 | GC/MS | ISO 17070 KS K 0733 | preservatives etc | Norway Product Regulation; EU REACH |
| TriCP | | | | 5ppm total | | | | | |
| Phenol | | Wearables skin contact *3) | Polymer *4) | 10ppm | Mar.2020 | GC-MS | Solvent extraction | coating, ink etc | EU 2009/48/EC |
| PFOA *11) | | All parts | | 10ppm | Sep.2013 | LC/MS | US EPA 3520/3540/3550 | coating, preservative | Norway Product Regulation; EU REACH |
| | | N,S fiber & coated materials N. Leather | | 1 ㎍/㎡ | | | | | |
| | | All parts | | 0.025ppm | Jul.2020 | | | | |
| PAHs | 8 items | Consumer products | Skin contact | 1ppm individually | Dec.2015 | GC/MS | IEC 62321-10:ED1 US EPA 3630C/8100/8310 | rubbers, headphones, 3D Glasses etc | EU REACH |
| | | Children's product | | 0.5ppm individually | | | | | |
| | 24 items | Wearables skin contact *3) | Polymer *4) | 1ppm individually 10ppm total | Sep.2015 | | | | Samsung Voluntarily Reduction 3 |
| Bisphenol A | | Food contact parts Skin contact for childern product *1) | | No intentional use | Jan.2015 | GC/MS HPLC LC | EN71-10, US EPA 3540C ASTM D 7574-09, Korea Standards and Specifications for Food Utensils, Containers and Packages | polycarbonate(PC), epoxy resin etc | France ACT N.2012-1442 |
| | | Wearables skin contact *3) | Polymer *4) | No intentional use | Mar.2020 | | | | Samsung Voluntarily Reduction |

| Susbtance | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|
| HBCDD | All parts | | No intentional use | Oct.2015 | GC/MS<br>LC/MS | IEC 62321-9:ED1<br>EPA 3540C/3545/3550B etc | flame retardant etc | Norway Regulation No.922/2004<br>EU REACH |
| Nonylphenol<br>Nonylphenol Ethoxylate | Leather, fiber, paper *12)<br>* Excl. medical equipment | | 1000ppm individually | Jan.2015 | HPLC<br>LC/MS | ASTM D7485/D7065 etc | cleaner, surfactants | Turkey Chemical Regulation |
| Alkylphenols<br>Alkylphenol ethoxylates | Wearables<br>skin contact *3) | N,S Fiber<br>N. Leather<br>Polymer *4) | 100ppm total<br>100ppm total | Mar.2020 | GC/MS<br>LC/MS | Organic solvent extraction | cleaner, surfactants | Samsung Voluntarily Reduction |
| TCEP, TDCPP | All parts | Orgranic | 1000ppm individually | Jan.2019 | GC/MS<br>HPLC/UV | IEC 62321-6:2015<br>EPA 3540C/3545/3550B | flame retardant etc | USA D.C. Law 21-108 |
| PHMG, PGH, PHMB<br>CMIT, MIT | Air-filter(Home AC, Air-purifier)<br>Cleaners<br>Aroma | | No intentional use | Oct.2019 | MALDI-TOF<br>HPLC/UV<br>HPLC/MS<br>GC/MS | Korea MoE Standard 2018-71 | disinfectant, anticorrosive agent etc | Korea Consumer Chemical Products Act |
| Halogenated flame retardants | TV,Monitor,Singage (over 100cm$^2$ display) | Enclosure<br>Stand | No intentional use | Mar.2021 | - | - | flame retardant etc | EU Ecodesign |
| Brominated Flame Retardants | Mobile *6)<br>NotePC<br>*Excl. powercable/adapter<br>AI&IoT<br>*Exp. PVC safety required | Organic | Br 900ppm | Jan.2012<br>Jan.2019 | C-IC | IEC 62321-3-2:2013<br>EN 50267-2-2,<br>EN 14582:2007,<br>ASTM D7359 etc | flame retardant etc | Samsung Voluntarily Reduction |
| Chloride Flame Retardants | Mobile *6)<br>AI&IoT<br>*Exp. PVC safety required | Organic | No intentional use<br>Cl 900ppm | Jan.2012<br>Jan.2019 | C-IC | EN 50267-2-2,<br>EN 14582:2007,<br>ASTM D7359 etc | flame retardant etc | |
| PVC | Mobile *6)<br>NotePC<br>*Excl. powercable/adapter<br>TV/Mon Iner Cable<br>*Excl. panel<br>AI&IoT<br>*Exp. PVC safety required | Organic | Cl 900ppm | Jan.2012<br>Jan.2019 | FT-IR | KS 0210 etc | wire jacket | Samsung Voluntarily Reduction |

| Susbtance | | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|---|
| Antimony and compounds | | Mobile *6)<br>NotePC<br>*Excl. powercable/adapter<br>TV/Mon Iner Cable<br>*Excl. panel | | 700ppm | Jan.2013 | ICP | EPA 3050B,ISO 8124-3,<br>EPA 3052, KSK 0852,<br>KSK 0731, EPA 7062 etc | flame retardant etc | Samsung Voluntarily Reduction |
| | | AI&IoT<br>*Exp. PVC safety required | | | Jan.2019 | | | | |
| TBBP-A | | All parts | Organic | 900ppm | Jan.2008 | GC/MS<br>LC/MS | EPA-3540C, EPA-3545,<br>EPA-3550B etc | flame retardant etc | Samsung Voluntarily Reduction |
| Beryllium and its compounds | | All parts | | 1000ppm | Jan.2013 | ICP | EPA 3050B,ISO 8124-3,<br>EPA 3052, KSK 0852,<br>KSK 0731, EPA 7062 etc | connector etc | Samsung Voluntarily Reduction |
| | | AI&IoT<br>*Exp. PVC safety required | | | Jan.2019 | | | | |
| Cobalt dichloride | | All parts | | No intentional<br>use (Co 1000ppm) | Jun.2011 | ICP | EPA-3052 | silica gel,<br>humidity Indicator | Samsung Voluntarily Reduction |
| VOCs | Phosphine | Mobile *6)<br>AI&IoT | Cable, cord | 0.08ppm | Jan.2019 | GC/MS<br>SIFT/MS<br>HPLC<br>Detection<br>tube | SEC Mobile Guidance | phosphorus FR | Samsung Voluntarily Reduction |
| | Toluene | | Applied/ | 16ppm | | | | adhesive, paint | |
| | Formaldehyde | | Purchasing | 0.08ppm | | | | additive etc | |
| | Benzene | | Product | 0.8ppm | | | | | |
| | | | Package | | | | | | |
| | | | Semicon | No intentional | | | SEC Standard *14) | - | |
| | | | SDC *13) | use | | | (Semicon, SDC) | | |
| pH Value | | Wearables | N,S Fiber | 4.0~7.5pH | Sep.2015 | pH-meter | ISO 3071 | - | Samsung Voluntarily Reduction |
| | | skin contact *3) | N. Leather | 3.5~7.5pH | | | | | |
| Cooper | | Wearables<br>skin contact *3) | N,S Fiber<br>N. Leather<br>Polymer *4) | 50ppm | Mar.2020 | AAS<br>ICP | ISO 105E04 | - | Samsung Voluntarily Reduction |
| Allergenic dyestuffs<br>Carcinogenic dyestuffs | | Wearables<br>skin contact *3) | N,S Fiber<br>N. Leather<br>Polymer *4) | 50ppm | Mar.2020 | LC/MS | DIN 54231 | - | Samsung Voluntarily Reduction |
| OPP | | Wearables<br>skin contact *3) | N,S Fiber | 100ppm | Sep.2015 | LC/MS/MS | ISO 13365<br>ISO 17070 | preservative etc | Samsung Voluntarily Reduction |
| | | | N. Leather | 750ppm | | | | | |
| CMC/CMK | | | | 300ppm | | | | | |

| Susbtance | Application | | Threshold | Implement | Test Equip' | Test Method | Example of use | Regulation |
|---|---|---|---|---|---|---|---|---|
| TCMTB | Wearables | N. Leather | 500ppm | Sep.2015 | LC/MS/MS | ISO 13365 | preservative etc | Samsung Voluntarily Reduction |
| OIT | skin contact *3) | | 100ppm | | | ISO 17070 | | |

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

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

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

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

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

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

7) Refers to the synthetic resin products defined in Korea Electrical Appliances and Household Safety Management Act

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

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

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

11) Implantable medical devices are excluded.

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

13) SDC : Samsung Display Co., Ltd.

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

## 2) RoHS Substances

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

- Cadmium and its compounds
- Lead and its compounds
- Mercury and its compounds
- Hexavalent chromium and its compounds
- PBBs
- PBDEs
- BBP
- DBP
- DEHP
- DIBP

3) Potentially Risk Substances

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

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

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

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

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

→ CMRs(Carcinogenic, Mutagenic, Reproductive toxicity), PBT(Persistent, Bioaccumulative, Toxicity), vPvB(very Persistent very Bioaccumulative)

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

1. Definition of Packaging Materials

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

2. Standard for Control of Substances in Packaging Materials

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

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

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

1. Definition of batteries

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

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

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

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

1. Definition of Biocide

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

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

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

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

Harmful organism : organism, including pathogenic agents, has an unwanted presence or a detrimental effect on humans, animals or environment

2. Standard for Control of Substances in Biocidal Products

- Scope: All biocides used for the protection of products and marketed as such

・Product protection: Protect product from e.g. mold or to maintain exterior quality(Gasket, antibacterial air filter, etc.)

・Marketing : The product is marketed as having biocidal claims. (SPI function, MWO·Oven silver ceramic coating and etc.)

- Effective date : October 1, 2016

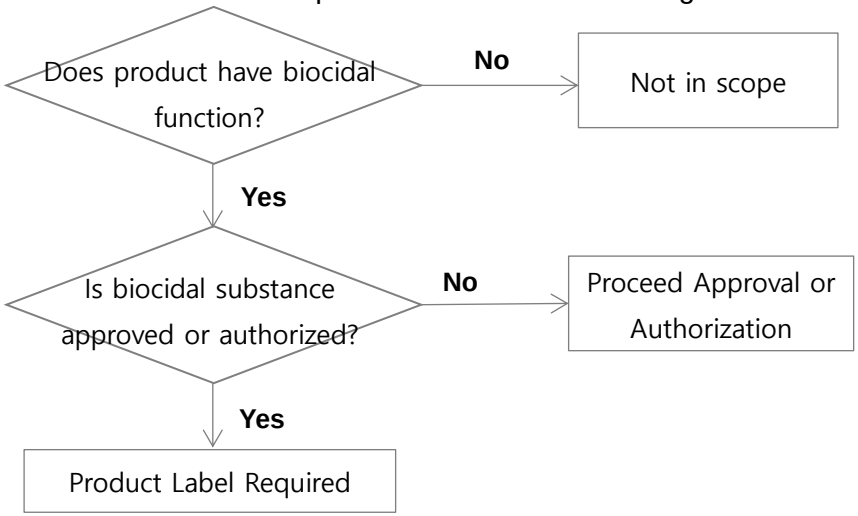
- Check EU ECHA, US EPA, Korea MoE approval or authorization before biocide application

・EU ECHA : https://echa.europa.eu/information-on-chemicals/biocidal-active-substances

・US EPA : https://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1

・Korea MoE : http://me.go.kr/home/web/index.do?menuId=71 (refer to Korea MoE's standards)

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




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

**Article 10 (Standard for Control of Substances in Automotive Electronics )**

1. Definition of Automotive Electronics
- All parts of electrical and electronic circuits in automobiles.

2. Standard for Control of Substances in Automotive Electronics

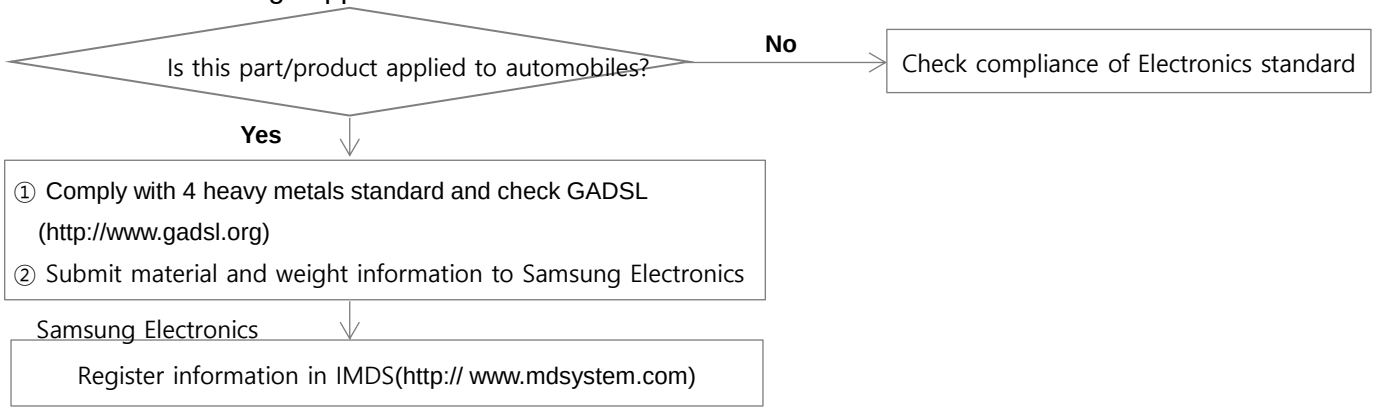
- Scope : Parts and materials used in automobiles;
  - ・All parts and materials used cars intended for less than 9 passenger cars, in addition to RVs and trucks under 3.5ton
  - ※ For automotive Electronics installed at the discretion of the consumer post sale are applied to Article 9.

- Effective date : September 1, 2017

- Heavy metal restriction and declaration of substances according to Global Automotive Declarable Substance List(GADSL)
  - ・4 heavy metals limit : Cd(100ppm ↓), Pb, Hg, Cr6+(1,000ppm ↓)
  - ・Substance Declaration: Global Automotive Declarable Substance List URL:www.gadsl.org

- Method : Register substances in IMDS upon customer request
  - ・Suppliers need to provide information of substances used from GADSL along with materials and their weight to applicable GBMs with which they have business
  - ・GBMs who receive the information need to register in IMDS
  - ・If providing information according to IMDS is not possible, discuss the method and the level of information disclosure.
  - → IMDS : International Material Data System(URL:www.mdsystem.com)

<Process for checking supplier's Automotive Electronics >



**# 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.

* Eco-Partner : Ecology + Economy

2. Scope

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

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

3. Criteria for certification

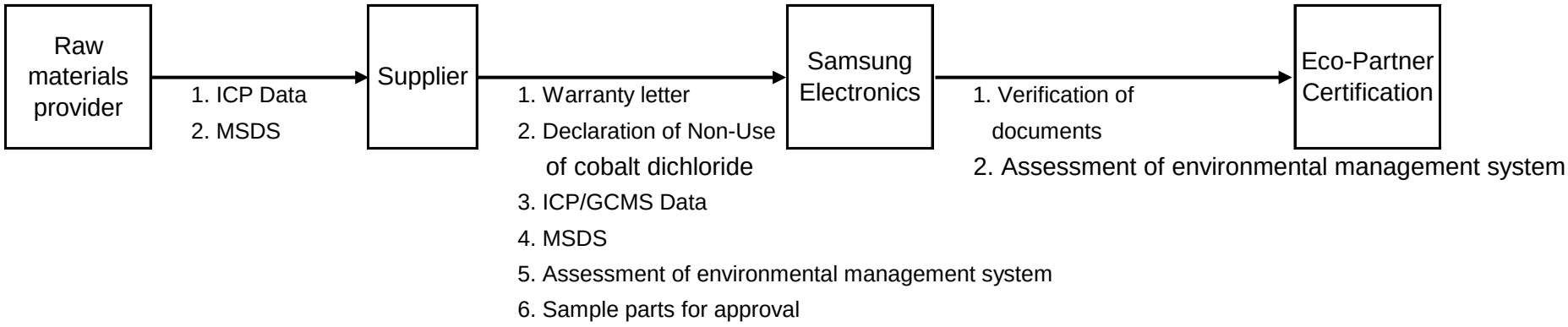
Compliance with Standards for control of substances used in products (0QA-2049) and the supplier's environmental management systems, will be assessed.

1) Criteria

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

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

2) Process for certification




* Warranty letter : Letter which confirms the information submitted to SEC is accurate. Effective period is then 1 year and shall be automatically renewed for each additional year unless SEC or the Company objects in writing at least a month prior to the expiration date.

## # Annex 2 : Exemptions list

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

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

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| **1** | **Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):** | | |
| 1(a) | ~~For general lighting purposes < 30 W: 5mg~~ | ~~-~~ | ~~2011.12.31~~ |
| | ~~For general lighting purposes < 30 W: 3,5mg~~ | ~~-~~ | ~~2012.12.31~~ |
| | For general lighting purposes < 30 W: 2.5mg | - | - |
| 1(b) | ~~For general lighting purposes≥ 30 W and < 50 W: 5mg~~ | ~~-~~ | ~~2011.12.31~~ |
| | For general lighting purposes≥ 30 W and < 50 W: 3,5mg | - | - |
| 1(c) | For general lighting purposes≥ 50 W and < 150 W: 5mg | - | - |
| 1(d) | For general lighting purposes≥150 W: 15mg | - | - |
| 1(e) | ~~For general lighting purposes with circular or square structural shape and tube diameter ≤17 mm: N~~ | ~~-~~ | ~~2011.12.31~~ |
| | For general lighting purposes with circular or square structural shape and tube diameter ≤17 mm : 7 | - | - |
| 1(f) | For special purposes: 5mg | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 1(g) | For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 mg | - | - |
| **2(a)** | **Mercury in double-capped linear fluorescent lamps for general lighting purposes not exceeding (per lamp)** | | |
| 2(a)(1) | ~~Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 5mg~~ | ~~-~~ | ~~2011.12.31~~ |
| | Tri-band phosphor with normal lifetime and a tube diameter < 9 mm (e.g. T2): 4mg | - | - |
| 2(a)(2) | ~~Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 5mg~~ | ~~-~~ | ~~2011.12.31~~ |
| | Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3mg | - | - |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| 2(a)(3) | ~~Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 5r~~ | ~~-~~ | ~~2011.12.31~~ |
| | Tri-band phosphor with normal lifetime and a tube diameter >17 mm and ≤28 mm (e.g. T8): 3.5r | - | - |
| 2(a)(4) | Tri-band phosphor with normal lifetime and a tube diameter >28 mm (e.g. T12): 5mg | ~~-~~ | ~~2012.12.31~~ |
| | Tri-band phosphor with normal lifetime and a tube diameter >28 mm (e.g. T12): 3.5mg | - | - |
| 2(a)(5) | ~~Tri-band phosphor with long lifetime (≥ 25 000 h): 8mg~~ | ~~-~~ | ~~2011.12.31~~ |
| | Tri-band phosphor with long lifetime (≥ 25 000 h): 5mg | - | - |
| 2(b) | Mercury in other fluorescent lamps not exceeding (per lamp) | | |
| 2(b)(1) | ~~Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10mg~~ | ~~-~~ | ~~2012.4.13~~ |
| 2(b)(2) | ~~Non-linear halophosphate lamps (all diameters): 15mg~~ | ~~1~7, 10,~~ | ~~2016.4.13~~ |
| | | ~~8 (other than in vitro),~~ | |
| | | ~~9 (other than industrial)~~ | |
| 2(b)(3) | ~~Non-linear tri-band phosphor lamps with tube diameter ≥ 17mm (e.g. T9) : No limitation of use~~ | ~~-~~ | ~~2011.12.31~~ |
| | Non-linear tri-band phosphor lamps with tube diameter ≥ 17mm (e.g. T9) : 15mg or less | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 2(b)(4) | ~~Lamps for other general lighting and special purposes (e.g. induction lamps) : No limitation of us~~ | ~~-~~ | ~~2011.12.31~~ |
| | Lamps for other general lighting and special purposes (e.g. induction lamps) : 15mg | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 3 | Mercury in cold cathode fluorescent lamps and external electrode fluorescent?lamps (CCFL and EEFL) for special purposes not exceeding (per lamp) | | |
| 3(a) | ~~Short length (≤ 500 mm) : No limitation of use~~ | ~~-~~ | ~~2011.12.31~~ |
| | Short length (≤ 500 mm) : 3.5mg or less | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 3(b) | ~~Medium length (> 500 mm and ≤ 1500 mm) : No limitation of use~~ | - | ~~2011.12.31~~ |
| 3(b) | Medium length (> 500 mm and ≤ 1500 mm) : 5mg or less | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 3(c) | ~~Long length (> 1500 mm) : No limitation of use~~ | - | ~~2011.12.31~~ |
| | Long length (> 1500 mm) : 13mg or less | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 4(a) | ~~low pressure discharge lamps : No limitation of use~~ | - | ~~2011.12.31~~ |
| | low pressure discharge lamps : 15mg or less | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 4(b) | Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra>60 | | |
| 4(b)-I | ~~P ≤ 155 W : No limitation of use~~ | - | ~~2011.12.31~~ |
| | P ≤ 155 W : 30mg | - | - |
| 4(b)-Ⅱ | ~~155 W < P ≤ 405 W : No limitation of use~~ | - | ~~2011.12.31~~ |
| | 155 W < P ≤ 405 W : 40mg | - | - |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| 4(b)-Ⅲ | ~~P > 405 W : No limitation of use~~ | ~~-~~ | ~~2011.12.31~~ |
| | P > 405 W : 40mg | - | - |
| 4(c) | Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) | | |
| 4(c)-I | ~~P ≤ 155 W : No limitation of use~~ | ~~-~~ | ~~2011.12.31~~ |
| | P ≤ 155 W : 25mg | - | - |
| 4(c)-Ⅱ | ~~155 W < P ≤ 405 W : No limitation of use~~ | ~~-~~ | ~~2011.12.31~~ |
| | 155 W < P ≤ 405 W : 30mg | - | - |
| 4(c)-Ⅲ | ~~P > 405 W : No limitation of use~~ | ~~-~~ | ~~2011.12.31~~ |
| | P > 405 W : 40mg | - | - |
| 4(d) | ~~Mercury in High Pressure Mercury (vapour) lamps (HPMV)~~ | ~~1~7, 10~~ | ~~2015.4.13~~ |
| | | ~~8 (other than in vitro),~~ | |
| | | ~~9 (other than industrial)~~ | |
| 4(e) | Mercury in metal halide lamps (MH) | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 4(f) | Mercury in other discharge lamps for special purposes not specifically mentioned | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 4(g) | ~~Hand crafted Luminous Discharge Tubes (HLDT) used for signs, decorative or architectural and spe~~ | ~~-~~ | ~~2018.12.31~~ |
| 5(a) | Lead in glass of cathode ray tubes | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | | 9 (industrial), 11 | 2024.7.21 |
| 5(b) | Lead in glass of fluorescent tubes not exceeding 0.2 % by weight | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 6(a) | Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0,35 % lead by weight | ~~1~7, 10~~ | ~~2019.6.30~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 6(a)-I | - Lead as an alloying element in steel for machining purposes containing up to 0,35 %<br>- Lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight | - | 2021.7.21 |
| 6(b) | Lead as an alloying element in aluminium containing up to 0.4 % lead by weight | ~~1~7, 10~~ | ~~2019.6.30~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 6(b)-Ⅰ | Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems fr | - | 2021.7.21 |
| 6(b)-Ⅱ | Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by | - | 2021.5.18 |
| 6(c) | Copper alloy containing up to 4 % lead by weight | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 7(a) | Lead in high melting temperature type solders (i.e. lead- based alloys containing 85 % by weight or more lead) | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 7(b) | Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 7(c)-I | Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass ceramic matrix compound | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 7(c)-Ⅱ | Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 7(c)-Ⅲ | ~~Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC~~ | - | ~~2013.1.1~~ |
| 7(c)-Ⅳ | Lead in PZT based dielectric ceramic materials for capacitors being part of integrated circuits or discrete semiconductors | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 8(a) | ~~Cadmium and its compounds in one shot pellet type thermal cut-offs~~ | - | ~~2012.1.1~~ |
| 8(b) | Cadmium and its compounds in electrical contacts | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 8(b)-I | Cadmium and its compounds in electrical contacts used in:<br>- circuit breakers;<br>- thermal sensing controls;<br>- thermal motor protectors (excluding hermetic thermal motor protectors);<br>- AC switches rated at:<br>. 6A and more at 250V AC and more; or<br>. 12A and more at 125V AC and more;<br>- DC switches rated at 20 A and more at 18 V DC and more<br>- switches for use at voltage supply frequency ≥ 200 Hz | 1~7, 10 | 2021.7.21 |
| 9 | Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 9(b) | Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications | ~~1~7, 10~~ | ~~2018.7.5~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 9(b)-I | ~~Lead in bearing shells and bushes for refrigerant- containing hermetic scroll compressors with a stated electrical power input equal or below 9 kW for heating, ventilation, air conditioning and refrigeration (HVACR) applications~~ | - | ~~2019.7.21~~ |
| 11(a) | ~~Lead used in C-press compliant pin connector systems~~ | - | ~~2010.9.24~~ |
| 11(b) | ~~Lead used in other than C-press compliant pin connector systems~~ | - | ~~2013.1.1~~ |
| 12 | ~~Lead as a coating material for the thermal conduction module C-ring~~ | - | ~~2010.9.24~~ |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| 13(a) | Lead in white glasses used for optical applications | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 13(b) | Cadmium and lead in filter glasses and glasses used for reflectance standards | ~~1~7, 10~~ | ~~2018.7.5~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 13(b)-I | Lead in ion coloured optical filter glass types | 1~7, 10 | 2021.7.21 |
| 13(b)-Ⅱ | Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Ann | 1~7, 10 | 2021.7.21 |
| 13(b)-Ⅲ | Cadmium and lead in glazes used for reflectance standards | 1~7, 10 | 2021.7.21 |
| 14 | ~~Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 % and less than 85 % by weight~~ | - | ~~2011.1.1~~ |
| 15 | Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages | 1~7, 10 | 2020.2.29 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 15(a) | Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: | 1~7, 10 | 2021.7.21 |
| | - a semiconductor technology node of 90 nm or larger | | |
| | - a single die of 300 mm2 or larger in any semiconductor technology node; | | |
| | - stacked die packages with die of 300 mm2 or larger, or silicon interposers of 300 mm2 or larger | | |
| 16 | ~~Lead in linear incandescent lamps with silicate coated tubes~~ | - | ~~2013.9.1~~ |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| 17 | Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 18(a) | ~~Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) 2 MgSi 2 O 7 :Pb)~~ | - | ~~2011.1.1~~ |
| 18(b) | Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi 2 O 5 :Pb) | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 18(b)-I | Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containir phosphors such as BSP (BaSi2O5:Pb) when used in medical phototherapy equipment, excluding applications covered by entry 34 of Annex IV | 5, 8 | 2021.7.21 |
| 19 | ~~Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)~~ | - | ~~2011.6.1~~ |
| 20 | ~~Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liqu~~ | - | ~~2011.6.1~~ |
| 21 | Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses | 1~7, 10 | 2020.2.29 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 21(a) | Cadmium when used in colour printed glass to provide filtering functions, used as a component in lighting applications installed in displays and control panels of EEE | 1~7, 10 | 2021.7.21 |
| 21(b) | Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lin | 1~7, 10 | 2021.7.21 |
| 21(c) | Lead in printing inks for the application of enamels on other than borosilicate glasses | 1~7, 10 | 2021.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| 23 | ~~Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less~~ | ~~-~~ | ~~2010.9.24~~ |
| 24 | Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 25 | Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 26 | ~~Lead oxide in the glass envelope of black light blue lamps~~ | ~~-~~ | ~~2011.6.1~~ |
| 27 | ~~Lead alloys as solder for transducers used in high-powered (designated to operate for several hours~~ | ~~-~~ | ~~2010.9.24~~ |
| 29 | Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC ( 1 ) | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 30 | Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 31 | Lead in soldering materials in mercury free flat fluorescent lamps (which e.g. are used for liquid crystal displays, design or industrial lighting) | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | | 9 (industrial), 11 | 2024.7.21 |
| 32 | Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 33 | Lead in solders for the soldering of thin copper wires of 100 μm diameter and less in power transformers | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 34 | Lead in cermet-based trimmer potentiometer elements | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 36 | ~~Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per~~ | - | ~~2010.7.1~~ |
| 37 | Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body | 1~7, 10 | 2021.7.21 |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |
| 38 | Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide | ~~1~7, 10~~ | ~~2016.7.21~~ |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial), 11 | 2024.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| 39 | ~~Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm 2 of light-emitting area) for~~ | ~~-~~ | ~~2018.11.20~~ |
| 39(a) | Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use use in solid state illumination or display systems | - | - |
| 40 | ~~Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment~~ | ~~-~~ | ~~2013.12.31~~ |
| 41 | Lead in solders and termination finishes of electrical and electronic components and finishes of printed circuit boards used in ignition modules and other electrical and electronic engine control systems, which for technical reasons must be mounted directly on or in the crankcase or cylinder of hand-held combustion engines (classes SH:1, SH:2, SH:3 of Directive 97/68/EC of the European Parliament and of the Council | 1~7, 10 | - |
| | | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| 42 | Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment with engine total displacement ≥ 15 litres; | 11 | 2024.7.21 |
| Equipment utilizing or detecting ionizing radiation | | | |
| IV-1 | Lead, cadimium and mercury in detectors for ionising radiation. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-2 | Lead bearings in X-ray tubes. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-3 | Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-4 | Lead in glass frit of X-ray tubes and image intensifiers and lead in glass frit binder for assembly of gas lasers and for vacuum tubes that convert electromagnetic radiation into electrons. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |

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

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| IV-1c | Lead, cadmium and mercury in infra-red light detectors. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-1d | Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| Others | | | |
| IV-9 | Cadmium in helium-cadmium lasers. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-10 | Lead and cadmium in atomic absorption spectroscopy lamps. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-11 | Lead in alloys as a superconductor and thermal conductor in MRI. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-12 | Lead and cadmium in metallic bonds to superconducting materials in MRI and SQUID detectors. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-13 | Lead in counterweights | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-14 | Lead in single crystal piezoelectric materials for ultrasonic transducers. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-15 | Lead in solders for bonding to ultrasonic transducers. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-16 | Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency | 8 (other than in vitro), | 2021.7.21 |
| | RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per sv | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-17 | Lead in solders in portable emergency defibrillators. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-18 | Lead in solders of high performance infrared imaging modules to detect in the range 8-14 µ.m. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-19 | Lead in Liquid crystal on silicon (LCoS) displays. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| IV-20 | Cadmium in X-ray measurement filters. | 8 (other than in vitro), | 2021.7.21 |
| | | 9 (other than industrial) | |
| | | 8 (in vitro) | 2023.7.21 |
| | | 9 (industrial) | 2024.7.21 |
| IV-21 | ~~Cadmium in phosphor coatings in image intensifiers for X-ray imagesX-ray until 31 December 2019 and in spare parts forX-ray systems placed on the EU marketbefore 1 January 2020~~ | ~~8, 9~~ | ~~2019.12.31~~ |
| IV-22 | Lead acetate marker for use in stereotactic head frames for use with CT and MRI and in positioning systems for gamma beam and particle therapy equipment. | 8, 9 | 2021.6.30 |
| IV-23 | Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ion | 8, 9 (other than industrial) | 2021.6.30 |
| IV-24 | ~~Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers.~~ | ~~8, 9~~ | ~~2019.12.31~~ |
| IV-25 | Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below – 20 °C under normal operating and storage conditions. | 8, 9 | 2021.6.30 |
| IV-26 | Lead in the following applications that are used durably at a temperature below – 20 °C under norma<br>(a) solders on printed circuit boards;<br>(b) termination coatings of electrical and electronic components and coatings of printed circuit boards;<br>(c) solders for connecting wires and cables; (d) solders connecting transducers and sensors.<br>Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below – 150 °C. | 8, 9 | 2021.6.30 |
| IV-27 | Lead in solders,<br>- termination coatings of electrical and electronic components and printed circuit boards,<br>- connections of electrical wires, shields and enclosed connectors, which are used in<br>(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<br>(b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets,<br>magnets for beam transport and beam direction control applied for particle therapy. | 8, 9 | 2020.6.30 |
| IV-28 | ~~Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards.~~ | ~~8, 9~~ | ~~2017.12.31~~ |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| IV-29 | Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in c<br>and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments. | 8, 9 | 2021.6.30 |
| IV-30 | ~~Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers~~<br>~~* spare parts for X-ray systems placed on the EU market before 1 January 2020.~~ | ~~8, 9~~ | ~~2019.12.31~~ |
| IV-31 | ~~Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices~~<br>~~before 22 July 2014 and used in category 8 equipment placed on the market before 22 July 2021, provided that reuse takes place~~<br>~~in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.~~ | ~~8, 9~~ | ~~2017.11.5~~ |
| IV-31a | Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts re | 8 (other than in vitro), | 2021.7.21 |
| | from and used for the repair or refurbishment of medical devices, including in vitro diagnostic m | 9 (other than industrial) | |
| | or electron microscopes and their accessories, provided that the reuse takes place in auditable | 8 (in vitro) | 2023.7.21 |
| | closed-loop business-to-business return systems and that each reuse of parts is notified to the custo | 9 (industrial) | 2024.7.21 |
| IV-32 | ~~Lead in solders on printed circuit boards of detectors and data acquisition units for Positron~~<br>~~Emission Tomographs which are integrated into Magnetic Resonance Imaging equipment.~~ | ~~8, 9~~ | ~~2019.12.31~~ |
| IV-33Ⅱa | ~~Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa~~<br>~~mobile medical devices other than portable emergency defibrillators~~ | ~~8, 9~~ | ~~2016.6.30~~ |
| IV-33Ⅱb | Lead in solders on populated printed circuit boards used in Directive 93/42/EEC<br>class IIb mobile medical devices other than portable emergency defibrillators | 8, 9 | 2020.12.31 |
| IV-34 | Lead as an activator in the fluorescent powder of discharge lamps when used for<br>extracorporeal photopheresis lamps containing BSP (BaSi 2 O 5 :Pb) phosphors | 8, 9 (other than industrial) | 2021.7.22 |
| IV-35 | Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 m<br>per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017 | 9 (industrial) | 2024.7.21 |
| IV-36 | Lead used in other than C-press compliant pin connector systems for industrial monitoring and c | 9 (industrial) | 2020.12.31 |
| IV-37 | Lead in platinized platinum electrodes used for conductivity measurements where at least one of<br>(a) wide-range measurements with a conductivity range covering more than 1 order of magnitude<br>(e.g. range between 0,1 mS/m and 5 mS/m) in laboratory applications for unknown concentrations;<br>(b) measurements of solutions where an accuracy of +/– 1 % of the sample range and where high corrosion<br>resistance of the electrode are required for any of the following: | 8, 9 | - |

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| | (i) solutions with an acidity < pH 1;<br>(ii) solutions with an alkalinity > pH 13;<br>(iii) corrosive solutions containing halogen gas;<br>(c) measurements of conductivities above 100 mS/m that must be performed with portable instruments | | |
| IV-38 | ~~Lead in solder in one interface of large area stacked die elements with more than 500 interconne~~ ~~interface which are used in X-ray detectors of computed tomography and X-ray systems. Expires on 31 December 2019.~~ ~~May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.~~ | ~~8, 9~~ | ~~2019.12.31~~ |
| IV-39 | Lead in micro-channel plates (MCPs) used in equipment where at least one of the following prop<br>(a) a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness + space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable;<br>(b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies<br>(i) a response time shorter than 25 ns;<br>(ii) a sample detection area larger than 149 mm 2 ;<br>(iii) a multiplication factor larger than 1,3 × 10 3 .<br>(c) a response time shorter than 5 ns for detecting electrons or ions; | 8 (other than in vitro),<br>9 (other than industrial) | 2021.7.21 |
| | (d) a sample detection area larger than 314 mm 2 for detecting electrons or ions; | 8 (in vitro) | 2023.7.21 |
| | (e) a multiplication factor larger than 4,0 × 10 7" | 9 (industrial) | 2024.7.21 |
| IV-40 | Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments. Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021. | 9 (industrial) | 2020.12.31 |
| IV-41 | Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, pc electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases. | 8 (in vitro) | - |
| IV-42 | Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation | 8 (other than in vitro),<br>9 (other than industrial) | - |
| IV-43 | Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required | 9 (industrial) | 2023.7.15 |

2) Exemption list out of RoHS Substances

| Exemption | | Applicable to categories | End |
|---|---|---|---|
| PF-1 | Photoresists or anti reflective coatings for photolithography process | - | - |
| PF-2 | ~~Photographic coatings applied to films, papers, or printing plates~~ | ~~-~~ | ~~2015.12.31~~ |
| PF-3 | Mist suppressants for non-decorative hard chromium (VI) | - | - |
| AT-1 | ~~Added in ceramics for certain electronic components~~ | ~~Mobile phones~~ | ~~2012.1.31~~ |
| AT-2 | ~~Used as a catalyst in polymeric materials for certain electronic components~~ | ~~Mobile phones~~ | ~~2012.1.31~~ |
| AT-3 | Additives in optical glass for preventing air bubbles and removing impurities. | - | - |
| AT-4 | Resistive layer inside Resistor Chip for technical reason | - | - |
| AT-5 | Antimony in high melting temperature type solders | - | - |
| AT-6 | Additives for thermal conduction on N type semiconductor(Bi2(Te, Se3) and P type semiconductor((Bi, Sb)2 Te3) Used in Thermal Electronic devices | - | - |
| BE-1 | Beryllium alloy used in connectors and certain electronic components | - | - |
| P-1 | Packaging entirely made of lead crystal glass<br>Glass packaging is allowed to exceed where it complies with all the conditions established in (Commission Decision 2001/171/EC)<br>(a) No lead, cadmium, mercury or hexavalent chromium shall be intentionally introduced during the manufacturing process<br>(b) The packaging material may only exceed the concentration limits because of the addition of recycled materials | Packaging | - |

**# Annex 3 : Examples of substances and its compounds**

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

| Lead and its compounds (1/3) | |
|---|---|
| Substance name | CAS No |
| Lead(II)metaborate | 10214-39-8 |
| Silicic acid, lead salt | 11120-22-2 |
| Lead antimonite | 13510-89-9 |
| Lead hydrogen arsenate | 7784-40-9 |
| Lead(II)arsenite | 10031-13-7 |

| Lead and its compounds (2/3) | |
|---|---|
| Substance name | CAS No |
| Lead sulfochromate yellow (C.I. Pigment Yellow 34)<br>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)<br>This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77605. | 12656-85-8 |
| Pyrochlore, antimony lead yellow<br>This substance is identified in the Colour Index by Colour Index Constitution Number, C.I. 77588. | 8012-00-8 |
| Lead titanium zirconium oxide | 12626-81-2 |

| Lead and its compounds (3/3) | |
|---|---|
| Substance name | CAS No |
| Silicic acid (H2Si2O5), barium salt (1:1), lead-doped with lead (Pb) content above the applicable generic concentration limit for 'toxicity for reproduction' Repr. 1A (CLP) or category 1 (DSD); the substance is a member of the group entry of lead compounds, with index number 082-001-00-6 in Regulation (EC) No 1272/2008 | 68784-75-8 |
| Lead oxide sulfate | 12036-76-9 |
| Acetic acid, lead salt, basic | 51404-69-4 |
| [Phthalato(2-)]dioxotrilead | 69011-06-9 |
| Dioxobis(stearato)trilead | 12578-12-0 |
| Pentalead tetraoxide sulphate | 12065-90-6 |
| Trilead dioxide phosphonate | 12141-20-7 |
| Fatty acids, C16-18, lead salts | 91031-62-8 |
| Sulfurous acid, lead salt, dibasic | 62229-08-7 |
| Lead cyanamidate | 20837-86-9 |
| Other Lead compounds | - |

| Mercury and its compounds (1/2) | |
|---|---|
| Substance name | CAS No |
| Mercury | 7439-97-6 |
| Mercury alloys;amalgam | - |
| Mercury(Ⅰ)oxide | 15829-53-5 |
| Mercury(II)oxide | 21908-53-2 |
| Mercury(Ⅰ)chloride | 10112-91-1 |
| Mercury(II)chloride | 7487-94-7 |

| Mercury and its compounds (2/2) | |
|---|---|
| Substance name | CAS No |
| Mercury(II)nitrate | 10045-94-0 |
| Mercury(Ⅰ)sulfate | 7783-35-9 |
| Mercury(II)fulminate | 628-86-4 |
| Mercury(II)acetate | 1600-27-7 |
| Methylmercury salts | e.g. 22967-92-6 |
| Ethylmercury salts | - |
| Propylmercury salts | - |
| Phenylmercury salts | - |
| Methoxyethyl-mercury salts | - |
| Dialkylmercury | - |
| Diphenylmercury | 587-85-9 |
| Mercuric sulfide | 1344-48-5 |
| Mercuric chloride | 33631-63-9 |
| Other mercury compounds | - |

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

| Hexavalent chromium and its compounds (2/2) | |
|---|---|
| Substance name | CAS No |
| Calcium chromate | 13765-19-0 |
| Strontium chromate | 7789-06-02 |
| Barium Chromate | 10294-40-3 |
| Lead chromate(orange) | 1344-38-3 |
| Dichromium zinc tetraoxide | 12018-19-8 |
| Zinc chromate | 13530-65-9 |
| Zinc dichromate | 14018-95-2 |
| Sodium dichromate | 10588-01-9 |
| Sodium dichromate dihydrate | 7789-12-0 |
| Ammonium dichromate | 7789-09-05 |
| Calcium dichromate | 14307-33-6 |
| Chromic acid | 7738-94-5 |
| Dichromic acid | 13530-68-2 |
| Copper chromite | 12053-18-8 |
| Zinc dichromate | 14018-95-2 |
| Potassium dichromate | 7778-50-9 |
| Other chromium compound | - |

| Polybrominated biphenyls (PBBs) (1/2) | |
|---|---|
| Substance name | CAS No |
| 2,2",4,4",5,5"-HEXABROMOBIPHENYL | 59080-40-9 |
| 2-BROMOBIPHENYL | 2052-07-5 |
| 3-BROMOBIPHENYL | 2113-57-7 |
| 4-BROMOBIPHENYL | 92-66-0 |
| DECABROMOBIPHENYL | 13654-09-6 |

| Polybrominated biphenyls (PBBs) (2/2) | |
|---|---|
| Substance name | CAS No |
| HEXABROMOBIPHENYL | 36355-01-8 |
| P,P"-DIBROMOBIPHENYL | 92-86-4 |
| Hexabromobiphenyl(Firemaster FF-1) | 67774-32-7 |
| Hexabromobiphenyl(Firemaster BP-6) | 59536-65-1 |
| TETRABROMOBIPHENYL | 40088-45-7 |
| Nonabiphenyl | 27753-52-2 |
| Heptabromobiphenyl | 35194-78-6 |
| Pentabrphenyl | 56307-79-0 |
| Tribromobiphenyl | 59080-34-1 |
| Octabromobiphenyl | 61288-13-9 |
| Other PBBs compounds | - |

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

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

| PCBs, PCTs, PCNs | |
|---|---|
| Substance name | CAS No |
| Polychlorinated bipheyls(PCB) | 1336-36-3 |
| Polychlorinated terpheyls(PCT) | 61788-33-8 |
| Polychlorinated naphtalenes(PCN) | 70776-03-3 |
| Trichloronaphthalenes | 1321-65-9 |
| Tetrachloronaphthalenes | 1335-88-2 |
| Pentachloronaphthalenes | 1321-64-8 |
| Octachloronaphthalenes | 2234-13-1 |
| Monomethyl-tetrachloro-diphenyl methane (Ugilec 141) | 76253-60-6 |
| Monomethyl-dibromo-diphenyl methane (DBBT) | 99688-47-8 |
| Monomethyl-dichlorodiphenyl methane,<br>Trade name: Ugilec121 | 81161-70-8 |
| 2,4,4'-trichlorobiphenyl | 7012-37-5 |
| 2,2',5,5'-Tetrachlorobiphenyl (PCB 52) | 35693-99-3 |
| 2,4,5,2',5'-pentachlorobiphenyl (PCB 101) | 37680-73-3 |
| 2,4,5,3',4'-Pentachlorobiphenyl (PCB 118) | 37508-00-6 |
| 2,2',3',4,4',5-Hexachlorobiphenyl (PCB 138) | 35065-28-2 |
| 2,2',4,4',5,5'-Hexachloro-1,1'-biphenyl (PCB 153) | 35065-27-1 |
| 2,3,4,5,2',4',5'-Heptachlorobiphenyl (PCB 180) | 35065-29-3 |
| Other PCBs, PCTs, PCNs and its compounds | - |

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

| Ozone layer depleting substances(ODS) (2/5) | |
|---|---|
| Substance name | CAS No |
| CFC-114 (C2F4Cl2) | 1320-37-2 |
| CFC-115 (C2F5Cl) | 76-15-3 |
| CFC-13 (CF3Cl) | 75-72-9 |
| CFC-111 (C2FCl5) | 354-56-3 |
| CFC-112 (C2F2Cl4) | 28605-74-5 |
| CFC-211 (C3FCl7) | 135401-87-5 |
| CFC-212 (C3F2Cl6) | 3182-26-1 |
| CFC-213 (C3F3Cl5) | 2354-06-05 |
| CFC-214 (C3F4Cl4) | 2268-46-4 |
| CFC-215 (C3F5Cl3) | 1652-81-9 |
| CFC-216 (C3F6Cl2) | 661-97-2 |
| CFC-217 (C3F7Cl) | 422-86-6 |
| Halon-1211 (CF2BrCl) | 353-59-3 |
| Halon-1301 (CF3Br) | 75-63-8 |
| Halon-2402 (C2F4Br2) | 124-73-2 |
| Carbon tetrachloride (CCl4) | 56-23-5 |
| Methylchloroform (C2H3Cl3) | 71-55-6 |
| Methyl bromide (CH3Br) | - |
| HBFC-21B2 (CHFBr2) | 1868-53-7 |
| HBFC-22B1 (CHF2Br) | 1511-62-2 |
| HBFC-31B1 (CH2FBr) | 373-52-4 |
| HBFC-121B4 (C2HFBr4) | 306-80-9 |
| HBFC-122B3 (C2HF2Br3) | - |
| HBFC-123B2 (C2HF3Br2) | 354-04-1 |
| HBFC-124B1 (C2HF4Br) | 124-72-1 |
| HBFC-131B3 (C2H2FBr3) | - |

| Ozone layer depleting substances(ODS) (3/5) | |
|---|---|
| Substance name | CAS No |
| HBFC-132B2 (C2H2F2Br2) | 75-82-1 |
| HBFC-133B1 (C2H2F3Br) | 421-06-7 |
| HBFC-141B2 (C2H3FBr2) | 358-97-4 |
| HBFC-142B1 (C2H3F2Br) | - |
| HBFC-151B1 (C2H4FBr) | 762-49-2 |
| HBFC-221B6 (C3HFBr6) | - |
| HBFC-222B5 (C3HF2Br5) | - |
| HBFC-223B4 (C3HF3Br4) | - |
| HBFC-224B3 (C3HF4Br3) | - |
| HBFC-225B2 (C3HF5Br2) | 431-78-7 |
| HBFC-226B1 (C3HF6Br) | - |
| HBFC-231B5 (C3H2FBr5) | - |
| HBFC-232B4 (C3H2F2Br4) | - |
| HBFC-233B3 (C3H2F3Br3) | - |
| HBFC-234B2 (C3H2F4Br2) | - |
| HBFC-235B1 (C3H2F5Br) | 460-88-8 |
| HBFC-241B4 (C3H3FBr4) | - |
| HBFC-242B3 (C3H3F2Br3) | 70192-80-2 |
| HBFC-243B2 (C3H3F3Br2) | 431-21-0 |
| HBFC-244B1 (C3H3F4Br) | 679-84-5 |
| HBFC-251B1 (C3H4FBr3) | 75372-14-4 |
| HBFC-252B2 (C3H4F2Br2) | 460-25-3 |
| HBFC-253B1 (C3H4F3Br) | 421-46-5 |
| HBFC-261B2 (C3H5FBr2) | 51584-26-0 |
| HBFC-262B1 (C3H5F2Br) | - |
| HBFC-271B1 (C3H6FBr) | 352-91-0 |

| Ozone layer depleting substances(ODS) (4/5) | |
|---|---|
| Substance name | CAS No |
| HCFC-21 (CHFCl2) | 75-43-4 |
| HCFC-22 (CHF2Cl) | 75-45-6 |
| HCFC-31 (CH2FCl) | 593-70-4 |
| HCFC-121 (C2HFCl4) | 354-14-3 |
| HCFC-122 (C2HF2Cl3) | 354-21-2 |
| HCFC-123 (C2HF3Cl2) | 306-83-2 |
| HCFC-124 (C2HF4Cl) | 2837-89-0 |
| HCFC-131 (C2H2FCl3) | 134237-34-6 |
| HCFC-132 (C2H2F2Cl2) | 25915-78-0 |
| HCFC-133 (C2H2F3Cl) | 75-88-7 |
| HCFC-141 (C2H3FCl2) | 25167-88-8 |
| HCFC-141b (CH3CFCl2) | 1717-00-6 |
| HCFC-142 (C2H3F2Cl) | 25497-29-4 |
| HCFC-142b (CH3CF2Cl) | 75-68-3 |
| HCFC-151 (C2H4FCl) | 1615-75-4 |
| HCFC-221 (C3HFCl6) | 134237-35-7 |
| HCFC-222 (C3HF2Cl5) | 134237-36-8 |
| HCFC-223 (C3HF3Cl4) | 134237-37-9 |
| HCFC-224 (C3HF4Cl3) | 134237-38-0 |
| HCFC-225 (C3HF5Cl2) | 128903-21-9 |
| HCFC-225ca (CF3CF2CHCl2) | 422-56-0 |
| HCFC-225cb (CF2ClCF2CHClF) | 507-55-1 |
| HCFC-226 (C3HF6Cl) | 134308-72-8 |
| HCFC-231 (C3H2FCl5) | 134190-48-0 |
| HCFC-232 (C3H2F2Cl4) | 134237-39-1 |
| HCFC-233 (C3H2F3Cl3) | 134237-40-4 |

| Ozone layer depleting substances(ODS) (5/5) | |
|---|---|
| Substance name | CAS No |
| HCFC-234 (C3H2F4Cl2) | 127564-83-4 |
| HCFC-235 (C3H2F5Cl) | 134237-41-5 |
| HCFC-241 (C3H3FCl4) | 134190-49-1 |
| HCFC-242 (C3H3F2Cl3) | 134237-42-6 |
| HCFC-243 (C3H3F3Cl2) | 134237-43-7 |
| HCFC-244 (C3H3F4Cl) | 134190-50-4 |
| HCFC-251 (C3H4FCl3) | 134190-51-5 |
| HCFC-252 (C3H4F2Cl2) | 134190-52-6 |
| HCFC-253 (C3H4F3Cl) | 134237-44-8 |
| HCFC-261 (C3H5FCl2) | 134237-45-9 |
| HCFC-262 (C3H5F2Cl) | 134190-53-7 |
| HCFC-271 (C3H6FCl) | 134190-54-8 |
| Bromochloromethane (CH2BrCl) | 74-97-5 |
| Halon-1202 (CBr2F2) | 75-61-6 |
| 1-bromopropane (n-propyl bromide) (C3H7Br) | 106-94-5 |
| Ethyl bromide (C2H5Br) | 74-96-4 |
| Trifluoromethyl iodide (CF3I) | 2314-97-8 |
| Methyl chloride (CH3Cl) | 74-87-3 |
| Other Ozone depleting substances and its compounds | - |

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

| Greenhouse Gas(GHG) (2/2) | |
|---|---|
| Substance name | CAS No |
| Perfluorobutane (Decafluorobutane) | 355-25-9 |
| Perfluoropentane (Dodecafluoropentane) | 678-26-2 |
| Perfluorohexane (Tetradecafluorohexane) | 355-42-0 |
| Perfluorocyclobutane | 115-25-3 |
| Sulfur Hexafluoride (SF6) | 2551-62-4 |
| HFC-23 (CHF3) | 75-46-7 |
| HFC-32 (CH2F2) | 1975-10-05 |
| HFC-41 (CH3F) | 593-53-3 |
| HFC-43-10mee (C5H2F10) | 138495-42-8 |
| HFC-125 (C2HF5) | 354-33-6 |
| HFC-134 (C2H2F4) | 359-35-3 |
| HFC-134a (CH2FCF3) | 811-97-2 |
| HFC-152a (C2H4F2) | 75-37-6 |
| HFC-143 (C2H3F3) | 430-66-0 |
| HFC-143a (C2H3F3) | 420-46-2 |
| HFC-227ea (C3HF7) | 431-89-0 |
| HFC-236cb (CH2FCF2CF3) | 677-56-5 |
| HFC-236ea (CHF2CHFCF3) | 431-63-0 |
| HFC-236fa (C3H2F6) | 690-39-1 |
| HFC-245ca (C3H3F5) | 679-86-7 |
| HFC-245fa (CHF2CH2CF3) | 460-73-1 |
| HFC-365mfc (CF3CH2CF2CH3) | 406-58-6 |
| Other GHGs | - |

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

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

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

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

| Azo colorants (1/2) | |
|---|---|
| Substance name | CAS No |
| 2,4,5-trimethylaniline | 137-17-7 |
| 2,4-diaminoanisole | 615-05-4 |
| 4-methyl-m-phenylenediamine (toluene-2,4-diamine) | 95-80-7 |
| 2-naphthylamine | 91-59-8 |
| 3,3-dichlorobenzidine | 91-94-1 |
| 3,3-dimethlbenzidine | 119-93-7 |
| 3,3-dimethoxybenzidine | 119-90-4 |
| 4,4'-methylenedi-o-toluidine | 838-88-0 |
| 4,4'- Diaminodiphenylmethane (MDA) | 101-77-9 |
| 2,2'-dichloro-4,4'-methylenedianiline | 101-14-4 |
| 4,4'-oxydianiline | 101-80-4 |
| 4,4-thiodianiline | 139-65-1 |
| 4-Aminoazobenzene | 60-09-3 |
| Biphenyl-4-ylamine | 92-67-1 |
| 4-chloro-o-toluidine | 95-69-2 |
| 5-nitro-o-toluidine | 99-55-8 |

| Azo colorants (2/2) | |
|---|---|
| Substance name | CAS No |
| Benzidine | 92-87-5 |
| o-aminoazotoluene | 97-56-3 |
| o-Toluidine | 95-53-4 |
| p-chloroaniline | 106-47-8 |
| 6-methoxy-m-toluidine (p-cresidine) | 120-71-8 |
| 2-Methoxyaniline; o-Anisidine | 90-04-0 |
| 2,4-xylidine | 95-68-1 |
| 2,6-xylidine | 87-62-7 |
| 4,4'-oxydianiline and its salts | - |
| Other Azo and its compounds | - |

| Nickel and its compounds | |
|---|---|
| Substance name | CAS No |
| Nickel | 7440-02-0 |
| Nickel(II)oxide | 1313-99-1 |
| Nickel Sulfate | 7786-81-4 |
| Nickel Sulfammate solution | 13770-89-3 |
| Nickel carbonate | 3333-67-3 |
| NICKEL(III)HYDROXIDE | 12125-56-3 |
| Nickel dihydroxide | 12054-48-7 |
| Nickel dioxide | 12035-36-8 |
| Tetracarbonylnickel | 13463-39-3 |
| Nickel di(acetate) | 373-02-4 |
| Other Nickel and its compounds | - |

| Organic tin compounds (TBT/TPT/DOT) (1/2) | |
|---|---|
| Substance name | CAS No |
| Tributyltin (TBT) | 56573-85-4 |
| Triphenyltin (TPT) | 668-34-8 |
| Bis(tributyltin)oxide (TBTO) | 56-35-9 |
| Coplymer of alkyl(c=8) acrylate,methyl methacrylate and tributyltin methacrylate | 67772-01-4 |
| Methyl Methacrylate and tributyl tin methacrylate | 26354-18-7 |
| Tributyl 2,3-dibromosuccinate | 31732-71-5 |
| Tributyltin acetate | 56-36-0 |
| Tributyltin bromide | 1461-23-0 |
| Tributyltin chloride | 1461-22-9 |
| Triisobutyltin chloride | 7342-38-3 |
| Tributyltin fluoride | 1983-10-04 |
| Tributyltin fumarate | 6454-35-9 |
| Tributyltin laurate | 3090-36-6 |
| Tributyltin naphthenate | 85409-17-2 |
| Tributyltin phthalate | 4782-29-0 |
| Tributyltin rosin salts | 26239-64-5 |
| Tributyltin sulfamate | 6517-25-5 |
| Tributyltin cyclopentane carbonate=mixture | 5409-17-2 |
| Tributyltinmethacrylate | 2155-70-6 |
| Triphenyltin acetate(fentin acetate) | 900-95-8 |
| Triphenyltin chloride | 639-58-7 |
| Triphenyltin chloro acetate | 7094-94-2 |
| Triphenyltin fluoride (fentin fluoride) | 379-52-2 |
| Triphenyltin hydroxide | 76-87-9 |
| Triphenyltin N, N" -dimethyldithiocarbamate | 1803-12-9 |

| Organic tin compounds (TBT/TPT/DOT) (2/2) | |
|---|---|
| Substance name | CAS No |
| Triphenyltin fatty acid((9-11) salt) | 18380-71-7 |
| | 18380-72-8 |
| | 47672-31-1 |
| | 94850-90-5 |
| Tributyltin maleate | 14275-57-1 |
| Other Organictin and its compounds | - |
| Dioctyl tin (DOT) | 26401-97-8 |
| 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-s | 15571-58-1 |
| Dioctyltin bis(isooctyl maleate) (DOT) | 33568-99-9 |
| Dioctyltin dichloride (DOT) | 3542-36-7 |
| Dioctyltin dilaurate (DOT) | 3648-18-8 |
| Dioctyltin maleate (DOT) | 16091-18-2 |
| Dioctyltin oxide (DOT) | 870-08-6 |
| Dioctyltin (DOT) compounds | - |

| Organic tin compounds (DBT) (1/2) | |
|---|---|
| Substance name | CAS No |
| Dibutyl tin (DBT) | 1002-53-5 |
| Dibutyltin dimaleate | 10192-92-4 |
| Dibutyltin diacetate | 1067-33-0 |
| Dibutyltin dilauryl mercaptide | 1185-81-5 |
| Dibutyltin dioleate | 13323-62-1 |
| Dibutyltin dipalmitate | 13323-63-2 |
| Dibutyltin disalicylate | 14214-24-5 |
| Di-n-butyltin bis(methyl maleate) | 15546-11-9 |

| Organic tin compounds (DBT) (2/2) | |
|---|---|
| Substance name | CAS No |
| Dibutytin di(2-ethylhexyl maleate) | 15546-12-0 |
| Di-n-butyltin di(monobutyl)maleate | 15546-16-4 |
| Bis (acetato) dibutyltin | 17523-06-7 |
| Dibutyltin dihexanoate | 19704-60-0 |
| Dibutyltin S,S'-bis (isooctyl mercaptoacetate) | 26636-01-1 |
| Dibutyltin bis(octylthioglycolate) | 2781-09-01 |
| Dibutyltin dibutoxide | 3349-36-8 |
| Dibutyltin dioctanoate | 4731-77-5 |
| Dibutyltin dibenzoate | 5847-54-1 |
| Dibutyltin distearate | 5847-55-2 |
| Diisobutyltin oxide | 61947-30-6 |
| Dibutyltin dichloride (DBTC) | 683-18-1 |
| Dibutyltin bis(benzyl maleate) | 7324-74-5 |
| Dibutyltin hydrogen borate | 75113-37-0 |
| Dibutyltin dilaurate | 77-58-7 |
| Dibutyltin maleate | 78-04-06 |
| Dibutyltin mercaptopropionate | 78-06-08 |
| Dibutyltin mercaptoacetate | 78-20-6 |
| Dibutyltin oxide (DBTO) | 818-08-6 |
| Dibutyltin linoleate | 85391-79-3 |
| Dibutyltin isooctanoate | 85702-74-5 |
| Dibutyltin linolenate | 95873-60-2 |
| Dibutyltin diisostearate | 59963-28-9 |
| Dibutyltin dibutyrate | 28660-63-1 |
| Dibutyltin bis(isooctylmaleate) | 25168-21-2 |
| Other Dibutyltin (DBT) compounds | - |

| Arsenic compounds and its compounds | |
|---|---|
| Substance name | CAS No |
| Diarsenic trioxide | 1327-53-3 |
| Diarsenic pentaoxide | 1303-28-2 |
| Arsenic | 7440-38-2 |
| Arsenic acid disodium salt, Heptahydrate | 10048-95-0 |
| Arsenic acid, copper salt | 10103-61-4 |
| Arsenic acid, diammonium salt | 7784-44-3 |
| Arsenic acid | 7778-39-4 |
| Arsenic acid, magnesium salt | 10103-50-1 |
| Arsenic trichloride | 7784-34-1 |
| Arsenic trihydride | 7784-42-1 |
| Arsenious acid, copper(II) salt | 10290-12-7 |
| Arsenious acid, potassium salt | 10124-50-2 |
| Calcium arsenate | 7778-44-1 |
| Triethyl arsenate | 15606-95-8 |
| Gallium arsenide | 1303-00-0 |
| Other Arsenic acid and its salts | - |

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

| **Perfluorooctane Sulfonates (PFOSs) (2/2)** | |
|---|---|
| Substance name | CAS No |
| Potassium heptadecafluorooctane-1-sulphonate | 2795-39-3 |
| Lithium heptadecafluorooctanesulphonate | 29457-72-5 |
| Tetraethylammonium heptadecafluorooctanesulphonate | 56773-42-3 |
| Ammonium heptadecafluorooctanesulphonate | 29081-56-9 |
| Heptadecafluorooctanesulphonamide | 754-91-6 |
| PFOS Ion | 45298-90-6 |
| PFOS Triphenylsulfonium Salt | 144089-15-6 |
| PFOS Sodium Salt | 4021-47-0 |
| 1-Decanaminium, N-decyl-N,N-dimethyl-, salt with 1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-heptadecafluoro-1-octanesulfonic acid (1:1) | 251099-16-8 |
| N-ethylheptadecafluorooctanesulphonamide | 4151-50-2 |
| Heptadecafluoro-N-methyloctanesulphonamide | 31506-32-8 |
| N-ethylheptadecafluoro-N-(2-hydroxyethyl)octane sulphonamide | 1691-99-2 |

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

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

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

| **Phenol** | |
|---|---|
| Substance name | CAS No |
| Phenol | 108-95-2 |

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

| PAHs (1/2) | | |
|---|---|---|
| Substance name | | CAS No |
| ∑8 | Benzo[a]pyrene (BaP) | 50-32-8 |
| | Dibenzo[a,h]anthracene (DBAhA) | 53-70-3 |
| | Benzo[a]anthracene (BaA) | 56-55-3 |
| | Chrysen (CHR) | 218-01-9 |
| | Benzo[j]fluoranthene (BjFA) | 205-82-3 |
| | Benzo[b]fluoranthene (BbFA) | 205-99-2 |
| | Benzo[k]fluoranthene (BkFA) | 207-08-9 |
| | Benzo[e]pyrene (BeP) | 192-97-2 |
| ∑24 | Acenaphthene | 83-32-9 |
| | Acenaphthene | 208-96-8 |
| | Acenaphthene | 120-12-7 |
| | Benzo[a]anthracene (BaA) | 56-55-3 |
| | Benzo[a]pyrene (BaP) | 50-32-8 |

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

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

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

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

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

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

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

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

| Brominated Flame Retardants and its compounds (1/2) | |
|---|---|
| Substance name | CAS No |
| Bis(2,4,6-tribromophenyl) carbonate | 67990-32-3 |
| Brominated trimethylphenyl-lindane | 59789-51-4 |
| Bromo dichloromethane | 75-27-4 |
| Bromo-/Chloro-alpha-olefin | 82600-56-4 |
| Bromo-/Chloro-paraffins | 68955-41-9 |
| Chlorinated and brominated phosphate ester | 125997-20-8 |
| Decabromo-diphenyl-ethane | 84852-53-9 |
| Dibromo-neopentyl-glycol | 3296-90-0 |
| Dibromo-propanol | 96-13-9 |
| Dibromo-styrene grafted PP | 171091-06-8 |
| Ethylene-bis(5,6-dibromo-norbornane-2,3-dicarboximide) | 52907-07-0 |
| N,N'-Ethylene –bis-(tetrabromo-phthalimide) | 32588-76-4 |
| Pentabromo-benzyl bromide | 38521-51-6 |
| Pentabromo-benzyl-acrylate, monomer | 59447-55-1 |
| Pentabromo-benzyl-acrylate, polymer | 59447-57-3 |
| Pentabromo-phenol | 608-71-9 |
| Pentabromo-toluene | 87-83-2 |
| Poly(2,6-dibromo-phenylene oxide) | 69882-11-7 |
| Poly-dibromo-styrene | 31780-26-4 |
| TBBS-bis-(2,3-dibromo-propyl-ether) | 42757-55-1 |
| TBPA Na salt | 25357-79-3 |
| TBPA, glycol-and propylene-oxide esters | 75790-69-1 |
| Tetrabromo phthalic anhydride(TBPA) | 632-79-1 |
| Tetrabromo-bisphenol S | 39635-79-5 |
| Tetrabromo-cyclo-octane | 31454-48-5 |
| Tetra-decabromo-diphenoxy-benzene | 58965-66-5 |

| Brominated Flame Retardants and its compounds (2/2) | |
|---|---|
| Substance name | CAS No |
| Tribromo-neopentyl-alcohol | 36483-57-5 |
| Tribromo-phenyl-allyl-ether, unspecified | 26762-91-4 |
| Tribromo-styrene | 61368-34-1 |
| Tris-(2,3-dibromo-propyl)-isocyanurate | 52434-90-9 |
| Tris(2,4-Dibromo-phenyl) phosphate | 49690-63-3 |
| Tris(tribromo-neopentyl) phosphate | 19186-97-1 |
| Vinyl bromide | 593-60-2 |
| TBBA bis-(2-hydroxy-ethyl-ether) | 4162-45-2 |
| TBBA carbonate oligomer | 28906-13-0 |
| TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminat | 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) pro | 68928-70-1 |
| TBBA-polycarbonate | 156042-31-8 |
| Other Brominated Flame Retardants | - |

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

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

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

| Antimony and compounds (2/2) | |
|---|---|
| Substance name | CAS No |
| Sodium antimonate | 15432-85-6 |
| Antimony pentoxide | 1314-60-9 |
| Antimony pentachloride | 7647-18-9 |
| Antimony(111) bromide | 7789-61-9 |
| Antimony(V) sulfide | 1315-04-4 |
| Antimony oxide | 1327-33-9 |
| Antimony tetroxide | 1332-81-6 |
| Antimony trifluoride | 7783-56-4 |
| Antimony | 7440-36-0 |
| Indium antimony | 1312-41-0 |
| Other Antimony and its compounds | - |

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

| Beryllium and compounds (1/2) | |
|---|---|
| Substance name | CAS No |
| Beryllium metal | 7440-41-7 |
| Beryllium oxide | 1304-56-9 |
| Beryllium carbonate | 66104-24-3 |
| Beryllium chloride | 7787-47-5 |
| Beryllium fluoride | 7787-49-7 |
| Beryllium hydroxide | 13327-32-7 |

| Beryllium and compounds (2/2) | |
|---|---|
| Substance name | CAS No |
| Beryllium nitrate | 13597-99-4 |
| Beryllium phosphate | 13598-15-7 |
| Beryllium sulfate | 13510-49-1 |
| Beryllium sulphate tetrahydrate | 7787-56-6 |
| BERYLLIUM ALUMINUM SILICATE | 1302-52-9 |
| BERYLLIUM COPPER | 11133-98-5 |
| Beryllium-aluminium alloy | 12770-50-2 |
| Other Beryllium and its compounds | - |

| Cobalt dichloride | |
|---|---|
| Substance name | CAS No |
| Cobalt dichloride | 7646-79-9 |

| Volatile Organic Compounds (VoCs) (1/2) | |
|---|---|
| Substance name | CAS No |
| Toluene | 108-88-3 |
| Benzene | 71-43-2 |
| Formaldehyde | 50-00-0 |
| Phosphine | 7803-51-2 |
| Ethylbenzene | 100-41-4 |
| Styrene | 100-42-5 |
| m-Xylene | 108-38-3 |
| pXylene | 106-42-3 |

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

| Copper | |
|---|---|
| Substance name | CAS No |
| Copper | 7440-50-8 |

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

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

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

| OPP, CMC/CMK, TCMTB, OIT | |
|---|---|
| Substance name | CAS No |
| 2-Phenylphenol (OPP) | 90-47-7 |
| 4-Chlro-3-methylphenol (CMC/CMK) | 59-50-7 |
| 2-(Thiocyanomethylthio)benzothiazol (TCMTB) | 21564-17-0 |
| 2-octylisothiazol-3(2H)-on (OIT) | 26530-20-1 |

| Radioactive | |
|---|---|
| Substance name | CAS No |
| Uranium-238 | 7440-61-1 |
| Radon | 10043-92-2 |
| Americium-241 | 14596-10-2 |
| Thorium-232 | 7440-29-1 |
| Cesium (Radioactive Isotopes only) | 7440-46-2<br>(Cs-137 010045-97-3) |
| Strontium (Radioactive Isotopes only) | 7440-24-6<br>(Sr-90 10098-97-2) |
| Other radioactive substances | - |

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

| Additive Brominated compounds (1/3) | |
|---|---|
| Substance name | CAS No |
| Decabromodiphenyl Ether, 2,2',3,3',4,4',5,5',6,6'-Decabromodi-phenyl ether (BDE-209) | 1163-19-5 |
| 2,4,6-Tribromophenol | 118-79-6 |
| Ammoniumbromide | 12124-97-9 |
| Decabromobiphenyl (decaBB) | 13654-09-6 |
| 2,2',3,4,4'-Pentabromodiphenyl ether (BDE-85) | 182346-21-0 |

| Additive Brominated compounds (2/3) | |
|---|---|
| Substance name | CAS No |
| 2,2',3,4,4',5'-Hexabromodiphenyl ether (BDE-138) | 182677-30-1 |
| 2,3,4,4'-Tetrabromodiphenyl ether (BDE-66) | 189084-61-5 |
| 2',3,4,6'-Tetrabromodiphenyl ether (BDE-71) | 189084-62-6 |
| 2,2',4,4',6-Pentabromodiphenyl ether (BDE-100) | 189084-66-0 |
| 2,3',4,4',6-Pentabromodiphenyl ether (BDE-119) | 189084-66-0 |
| 2-Hydroxypropyl-2-(2-hydroxyethoxy)-ethyl-TBP | 20566-35-2 |
| 2,2',4,4',5,6'-Hexabromodiphenyl ether (BDE-154) | 207122-15-4 |
| 2,2',3,4,4',5',6-Heptabromodiphenyl ether (BDE-183) | 207122-16-5 |
| 2,2',4,5'-Tetrabromodiphenyl ether (BDE-49) | 243982-82-3 |
| Hexabromocyclododecane (HBCD) | 25637-99-4 |
| 2,4,6-tris(2,4,6-tribromophenoxy)-1,3,5-triazine (TTBPTAZ | 25713-60-4 |
| Bis-(2-ethylhexyl)-3,4,5,6-tetrabromophthalate (BEHTEBP | 26040-51-7 |
| Octabromobiphenyl (octaBB) | 27858-07-7 |
| Hexabromocyclododecane (HBCD) | 3194-55-6 |
| Penta-bromodiphenyl ether (Penta-BDE) | 32534-81-9 |
| Octa-bromodiphenyl ether (Octa-BDE) | 32536-52-0 |
| Ethylene Bis-Tetrabromophthalimide | 32588-76-4 |
| 1,2-Dibromo-4-(1,2-dibromoethyl) cyclohexane | 3322-93-8 |
| 2,3-Dibromopropyl-2,4,6-tribromophenyl ether (DPTE) | 35109-60-5 |
| Hexabromobiphenyl (hexaBB) | 36355-01-8 |
| 1,2-Bis(2,4,6-tribromo-phenoxy) ethane | 37853-59-1 |
| 3,3',4,4'-Tetrabromodiphenyl ether (BDE-77) | 40088-47-9 |
| 2,4,4'-Tribromobiphenyl ether (BDE-28) | 41318-75-6 |
| TBBS-bis-(2,3-dibromo-propylether) | 42757-55-1 |
| 2,2',3,3',4,4',5,6'-Octabromodiphenyl ether (BDE-196) | 446255-38-5 |

| Additive Brominated compounds (3/3) | |
|---|---|
| Substance name | CAS No |
| Hexahydro-1,3,5-tris(2,3-dibromopropyl)-1,3, 5-triazine-2,4,6-trione | 52434-90-9 |
| Ethylene-bis(5,6-dibromonorbornane-2,3-dicarboximide) | 52907-07-0 |
| 2,2',4,4'-Tetrabromodiphenyl ether (BDE-47) | 5436-43-1 |
| Bis(methyl) tetrabromophtalate | 55481-60-2 |
| Tetra-decabromodiphenoxybenzene | 58965-66-5 |
| 2,2',4,4',5-Pentabromodiphenyl ether (BDE-99) | 60348-60-6 |
| 2,4,6-Tribromoanisol (TBA) | 607-99-8 |
| Pentabromophenol | 608-71-9 |
| Tribromostyrene | 61368-34-1 |
| 2,4-Dibromophenol | 615-58-7 |
| 2,2',4,4',5,5'-Hexabromobiphenyl ether (BDB 153) | 68631-49-2 |
| TBPA, glycoland propyleneoxide esters | 75790-69-1 |
| Decabromodiphenyl ethane | 84852-53-9 |
| Pentabromoethylbenzene | 85-22-3 |
| Pentabromotoluene | 87-83-2 |
| Tris (tri bromoneopentyl) phosphate | 19186-97-1 |

| Reactive Brominated compounds (1/2) | |
|---|---|
| Substance name | CAS No |
| FR-122P (polymer) | 1195978-93- 8 |
| Brominated epoxy resin endcapped with tribromophenol | 135229-48-0 |
| Brominated epoxy resin endcapped with tribromophenol | 139638-58-7 |
| Brominated epoxy resin endcapped with tribromophenol | 158725-44-1 |
| Tetrabromobisphenol A Bis (2,3-dibromopropyl) Ether | 21850-44-2 |

| Reactive Brominated compounds (2/2) | |
|---|---|
| Substance name | CAS No |
| Tetrabromobisphenol A diallyl ether | 25327-89-3 |
| 1,2,3-Tribromophenyl-allylether | 26762-91-4 |
| TBBA carbonate oligomer | 28906-13-0 |
| Brominated Epoxy Polymers | 30496-13-0 |
| 2,4,6-Tribromophenyl-allylether | 3278-89-5 |
| TBBA-bisphenol A-phosgene polymer | 32844-27-2 |
| TBBA-dimethylether | 37853-61-5 |
| Tetrabromobisphenol S | 39635-79-5 |
| TBBA-epichlorhydrin oligomer | 40039-93-8 |
| TBBA bis-(2-hydroxy-ethylether) | 4162-45-2 |
| Poly tribromostyrene | 57137-10-7 |
| Poly(pentabromobenzyl acrylate) | 59447-57-3 |
| Tetrabromophthalic anhydride | 632-79-1 |
| Tetrabromobisphenol A-tetrabromobisphenol A diglycidyl ether copolymer | 68928-70-1 |
| Poly(2,6-dibromophenylene oxide) | 69882-11-7 |
| TBBA-TBBAdiglycidyl-ether oligomer | 70682-74-5 |
| TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated | 71342-77-3 |
| TBBPA (Tetrabromobisphenol A) | 79-94-7 |
| Brominated Polystyrene | 88497-56-7 |
| TBBA carbonate oligomer, phenoxy end capped | 94334-64-2 |

| Additive Chlorinated compounds | |
|---|---|
| Substance name | CAS No |
| Polychlorinated biphenyls (PCB) | 1336-36-3 |
| Bis(hexachlorocyclopentadieno) Cyclooctane (Dechlorane A | 13560-89-9 |
| Chlorinated paraffins | 63449-39-8 |
| Paraffin oils, chloro (Chlorinated paraffins) | 85422-92-0 |
| Alkanes, C10-13, chloro (Chlorinated Paraffins) | 85535-84-8 |
| Alkanes, C14-17, chloro (Chlorinated paraffins) | 85535-85-9 |

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

| Additive Phosphorus compounds (1/3) | |
|---|---|
| Substance name | CAS No |
| Triphenylphosphate (TPHP) | 115-86-6 |
| Diphenyloctyl phosphate | 115-88-8 |
| 2-ethylhexyl diphenyl phosphate | 1241-94-7 |
| Resorcinolbis (biphenylphosphate) (PBDPP) | 125997-21-9 |
| Tris(2,3-dibromopropyl) phosphate | 126-72-7 |
| Tri-n-butyl phosphate (TBP) | 126-73-8 |
| DIPHENYL PHOSPHATE, TETRADECYL | 142474-86-0 |
| Oligomeric ethyl ethylene phosphate/Alkylphosphate Oligor | 184538-58-7 |

| Additive Phosphorus compounds (2/3) | |
|---|---|
| Substance name | CAS No |
| Aluminum diethylphosphinate | 225789-38-8 |
| Dimethyl propane phosphonate (DMPP) | 242-555-3 |
| Trixylyl phosphate (TXP) | 25155-23-1 |
| Diphenylcresyl phosphate | 26444-49-5 |
| Isopropylated triphenyl phosphate (TIPP) | 26967-76-0 |
| Linear alkyl diphenyl phosphate | 27460-02-2 |
| Zinc Diethylphosphinate | 284685-45-6 |
| Isodecyl diphenyl phosphate | 29761-21-5 |
| Melamine Phosphate | 41583-09-9 |
| Tetrakis(hydroxy methyl)phosphonium sulphate (THPS) | 55566-30-8 |
| Tri-m-cresylphosphate (TMCP) | 563-04-2 |
| t-Butylated triphenyl phosphate mixture | 56803-37-3 |
| Linear alkyl diphenyl phosphate | 56827-92-0 |
| Resorcinolbis (biphenylphosphate) (PBDPP) | 57583-54-7 |
| Tris(2-chloropropyl) phosphate | 6145-73-9 |
| Poly-(mphenylene methylphosphonate) (Fyrol PMP) | 63747-58-0 |
| t-Butylated triphenyl phosphate mixture | 65652-41-7 |
| Piperazine pyrophosphate | 66034-17-1 |
| Tris(isobutylphenyl) phosphate | 68937-40-6 |
| Isopropylated triphenyl phosphate (TIPP) | 68937-41-7 |
| Isopropylated triphenyl phosphate (TIPP) | 72668-27-0 |
| Red phosphorous | 7723-14-0 |
| Tri-o-cresyl phosphate (TOCP) | 78-30-8 |
| Tri-p-cresyl phosphate (TPCP) | 78-32-0 |
| t-Butylated triphenyl phosphate mixture | 78-33-1 |
| Diethylethane phosphonate (DEEP) | 78-38-6 |

| Additive Phosphorus compounds (3/3) | |
|---|---|
| Substance name | CAS No |
| Triethyl phosphate (TEP) | 78-40-0 |
| Tris(2-ethylhexyl) phosphate (TEHP) | 78-42-2 |
| Tris(2-butoxyethyl) phosphate (TBEP) | 78-51-3 |
| Tris(2-chloroethyl) phosphate (TCEP) | 115-96-8 |
| Tetrakis(hydroxymethyl)-phosphonium chloride (THPC) | 124-64-1 |
| Tricresyl phosphate (TCP) | 1330-78-5 |
| Tris(1-chloro-2-propyl) phosphate (TCPP) | 13674-84-5 |
| Tris(1,3-dichloro-2-propyl)phosphate (TDCPP) | 13674-87-8 |
| Tris(3-chloropropyl) phosphate | 26248-87-3 |

| Reactive Phosphorus compounds | |
|---|---|
| Substance name | CAS No |
| Diethyl N,N bis (2-hydroxyethyl) aminomethyl phosphonate | 2781-11-05 |
| Phosphoric acid, mixed esters with [1,1'-bisphenyl 4, 4'-diol] and phenol; BPBP | 1003300-73-9 |
| Melamine Pyrophosphate | 15541-60-3 |
| Bisphenol A bis-(diphenyl phosphate); BAPP | 181028-79-5 |
| Melamine Polyphosphate | 218768-84-4 |
| Dihydrooxaphosphophenantreneoxid (DOPO) | 35948-25-5 |
| Melamine Polyphosphate | 56386-64-2 |
| Bisphenol A bis-(diphenyl phosphate); BAPP | 5945-33-5 |
| Ammoniumpolyphosphate | 68333-79-9 |
| Polyphosphonate | 68664-06-2 |
| Poly[phosphonate-co-carbonate] | 77226-90-5 |

| Chlorinated compounds (1/5) | |
|---|---|
| Substance name | CAS No |
| CHLOROENDRIC ACID | 115-28-6 |
| CYCLOPROPANECARBOXYLIC ACID, 3-(2-CHLORO-3, 3,3-TRIFLUORO-1-PROPENYL)-2,2-DIMETHYL-, (2-METHYL(1,1 -BIPHENYL)-3-YL)METHYL ESTER, (1.ALPHA.,3.ALPHA.(Z))- | 82657-04-3 |
| (S)-2-CHLOROPROPIONIC ACID | 29617-66-1 |
| 1-(3,4-DICHLOROPHENYL)-3,3-DIMETHYLUREA | 330-54-1 |
| 1H-BENZIMIDAZOLE, 2-(2-CHLOROPHENYL)- | 3574-96-7 |
| 1H-ISOINDOLE-1,3(2H)-DIONE, 4,5,6,7-TETR | 30125-47-4 |
| 1-PROPENE, HOMOPOLYMER, CHLORINATED | 68442-33-1 |
| 2-(4-CHLOROBENZYL)-BENZIMIDAZOLE | 5468-66-6 |
| 2-BUTANONE, 3-CHLORO- | 4091-39-8 |
| 2-CHLORO-6-NITROANISOLE | 80866-77-9 |
| 2-NAPHTHALENE CARBOXAMIDE COMPOUND | 5280-78-4 |
| 2-NAPHTHALENECARBOXAMIDE, 4-[(2,5-DICHLORO PHENYL)AZO]-3-HYDROXY-N-PHENYL- | 6041-94-7 |
| 2-NAPHTHANILIDE, 4 -CHLORO-3-HYDROXY-2 ,5 -DIMETHOXY-4-((2-METHOXY-5-(PHENYL CARBAMOYL)PHENYL)AZO)- | 5280-68-2 |
| 2-NAPHTALENECARBOXAMIDE, 3-HYDROXY-4-((2-METHOXY-5-((PHENYLAMINO)CARBONYL)PHENYL) AZO)-N-(2-METHOXY-5-CHLOROPHENYL)- | 67990-05-0 |
| 1,4-BIS((1-(2,5-DICHLOROPHENYLAZO)-2-HYDROXY-3 | 3905-19-9 |
| 2-NAPHTHALENECARBOXYLIC ACID, 4-((5-CHLORO-4 METHYL-2-SULFOPHENYL)AZO)-3-HYDROXY- | 7585-41-3 |
| 2-NAPHTHALENECARBOXYLIC ACID, CHLORO-AZO | 7023-61-2 |

| Chlorinated compounds (2/5) | |
|---|---|
| Substance name | CAS No |
| 4,5-DICHLORO-2-N-OCTYL-3-ISOTHIAZOLONE | 64359-81-5 |
| 3-(4-CHLOROPHENYL)-1,1-DIMETHYLUREA | 150-68-5 |
| 2-PYRAZOLIN-5-ONE, 4,4 -(3,3 -DICHLORO-4,4 -BIPHENYLYLENEBISAZO)- | 3520-72-7 |
| 4(2-CHLOROETHYL)MORPHOLINE HYDROCHLORIDE | 3647-69-6 |
| 4-CHLOROTOLUENE | 106-43-4 |
| 5-CHLORO-2-METHYL-4-ISOTHIAZOLIN-3-ONE | 26172-55-4 |
| ACETIC ACID VINYL ESTER, POLYMER WITH CHLOROETHYLENE AND VINYL ALC. | 25086-48-0 |
| ANILINE HYDROCHLORIDE | 142-04-1 |
| BARIUM CHLORIDE (BACL2), DIHYDRATE | 10326-27-9 |
| BASIC PIGMENT VIOLET 23 PICCS CARBAZOLE | 215247-95-3 |
| BENZAMIDE, 2,6-DICHLORO- | 2008-58-4 |
| BENZAMIDE,-CHLORO -AZO-TRIFLUOROMETHYL | 57971-97-8 |
| BENZENE, 1,2,4-TRICHLORO- | 120-82-1 |
| BENZENE, 1,2-DICHLORO- | 95-50-1 |
| BENZENE, 1-CHLORO-3-NITRO- | 121-73-3 |
| BENZENE, 1-CHLORO-4-ETHENYL- | 1073-67-2 |
| Benzenesulfonic acid,4-chloro-2-(2-(2-hydroxy-3-((2-methoxyphenyl)amino)carbonyl)-1-naphthalenyl) diazenyl)-5-methyl-,sodium salt | 73263-37-3 |
| C.I. 20055 CROMOPHTAL RED | 68259-05-2 |
| BUPIVACAINE HYDROCHLORIDE | 14252-80-3 |
| BUTANAMIDE, N,N -(3,3 -DIMETHYL(1,1 -BIPHENYL)-4,4 -DIYL)BIS(2-((2,4-ICHLOROPHENYL)AZO)-3-OXO- | 5979-28-2 |

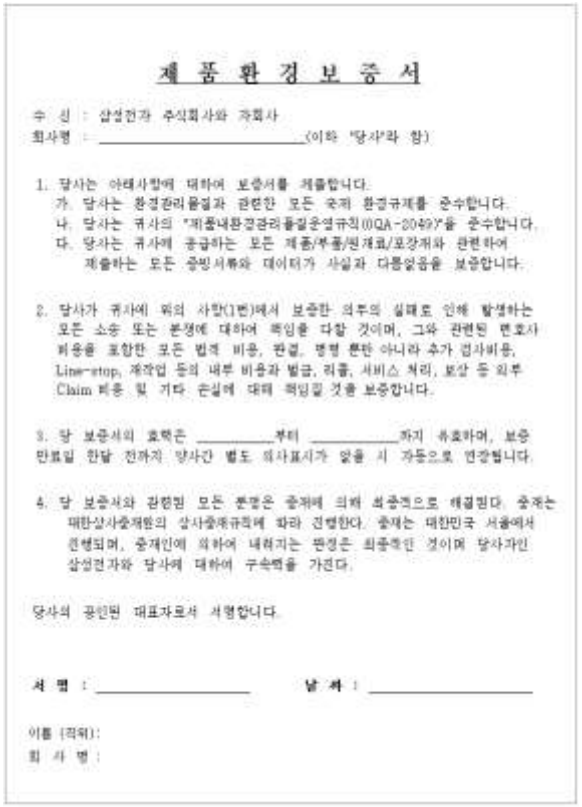
| Chlorinated compounds (3/5) | |
|---|---|
| Substance name | CAS No |
| ACETOACETAMIDE, 2-((4-CHLORO-2-NITROPHENYL) AZO)-N-(2-OXO-5-BENZIMIDAZOLINYL)- | 12236-62-3 |
| 2-BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL) AZO)-3-HYDROXY-N-(2-METHOXYPHENYL)- | 13515-40-7 |
| BUTENAMIDE, 2-((4-CHLORO-2-NITROPHENYL) AZO)-N-(2-CHLOROPHENYL)-3-OXO- | 6486-23-3 |
| C.I. PIGMENT YELLOW 55 | 6358-37-8 |
| 2-BUTENAMIDE, N-(4-CHLORO-2,5-DIMETHOXY PHENYL)-2-((2,5-DIMETHOXY-4-((PHENYLAMINO) SULFONYL)PHENYL)AZO)-3-HYDROXY- | 12225-18-2 |
| BUTYL 2,4-DICHLOROPHENOXYACETATE | 94-80-4 |
| C.I. PIGMENT GREEN 7 | 1328-53-6 |
| C.I. PIGMENT YELLOW 83 | 5567-15-7 |
| CARBONIC DICHLORIDE | 75-44-5 |
| CHLORIDE | 16887-00-6 |
| CHLORINE | 22537-15-1 |
| CHLORINE | 7782-50-5 |
| CHLOROANILINE | 27134-26-5 |
| CHLORO DIHYDRO QUINOA CRIDINEDIONE | 3089-17-6 |
| CHLORODIPHENYL | 37324-23-5 |
| CHLOROMETHYL PIVALATE (POM) | 18997-19-8 |
| CHLOROMETHYL THIAZOLONE | 55965-84-9 |
| CHLOROPENTANES, MIXTYRE OF ISOMERS | 29656-63-1 |
| CHLOROTOLURON | 15545-48-9 |

| Chlorinated compounds (4/5) | |
|---|---|
| Substance name | CAS No |
| Trisodium bis[5-chloro-3-[(4,5-dihydro-3-methyl-5-oxo-1-phenyl-1H-pyrazol-4-yl)azo]-2-hydroxybenzene sulphonato(3-)]chromate(3-) | 73324-05-7 |
| Hydrogen bis[1-[(5-chloro-2-hydroxyphenyl)azo]-2-naphtholato(2-)]chromate(1-) | 31714-55-3 |
| COBALT CHLORIDE (COCL2), HEXAHYDRATE | 7791-13-1 |
| COPPER PERCHLORO PHTHALOCYANINE | 14832-14-5 |
| COPPER MONOCHLORO PHTHALOCYANINE | 12239-87-1 |
| DIARYLANILIDE YELLOW | 6358-85-6 |
| DICHLORO-2,2-P-CYCLOPHANE | 28804-46-8 |
| DICHLORODIMETHYLSILANE REACTION PRODUCT WITH SILICA | 68611-44-9 |
| 1,4:7,10-DIMETHANODIBENZO(A,E)CYCLOOCTENE | 13560-89-9 |
| DYE 26 | 76871-75-5 |
| EPICHLOROHYDRIN | 106-89-8 |
| POLYOLEFINS SULFONIC ACIDS | 68037-39-8 |
| HYDROCHLORIC ACID | 7647-01-0 |
| ISOINDOLE-TETRACHLORO-QUINOLINYL | 56731-19-2 |
| 1-(4-CHLORO-O-SULFO-5-TOLYLAZO)-2-NAPHTHOL, BARIUM SALT | 5160-02-1 |
| LITHIUM CHLORIDE (LICL) | 7447-41-8 |
| LITHIUM PERCHLORATE | 7791-03-9 |
| METHYLAMINE HYDROCHLORIDE | 593-51-1 |
| METHYLPHOSPHONIC DICHLORIDE | 676-97-1 |
| NICKEL CHLORIDE (NICL2) | 7718-54-9 |
| NICKEL CHLORIDE (NICL2), HEXAHYDRATE | 7791-20-0 |

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

## # Appendix-4 : Submission format for Eco-partner certification

### 제품환경보증서(국문)



제 품 환 경 보 증 서

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

1. 당사는 아래사항에 대하여 보증서를 제출합니다.
   가. 당사는 환경관리물질과 관련한 모든 국제 환경규제를 준수합니다.
   나. 당사는 귀사의 "제품내환경관리물질운영규칙(0QA-2049)"을 준수합니다.
   다. 당사는 귀사에 공급하는 모든 제품/부품/원재료/포장재와 관련하여 제출하는 모든 증빙서류와 데이터가 사실과 다름없음을 보증합니다.

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

3. 당 보증서의 효력은 _____부터 _____까지 유효하며, 보증 만료일 한달 전까지 당사간 별도 의사표시가 없을 시 자동으로 연장됩니다.

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

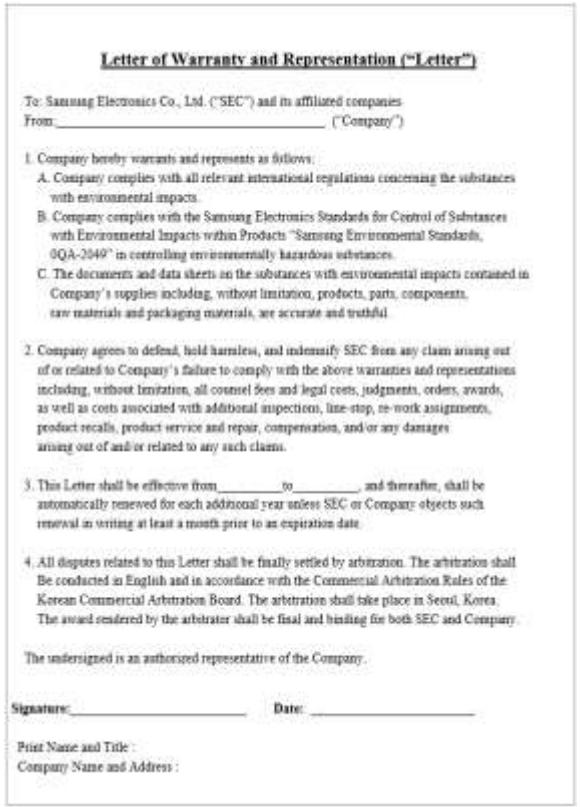
당사의 공인된 대표자로서 서명합니다.

서 명 : _____ 날 짜 : _____

이름 (직위) :
회 사 명 :

제품환경보증서

### Letter of Warranty and Representation(ENG)



**Letter of Warranty and Representation ("Letter")**

To: Samsung Electronics Co., Ltd. ("SEC") and its affiliated companies
From: _____ ("Company")

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

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

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

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

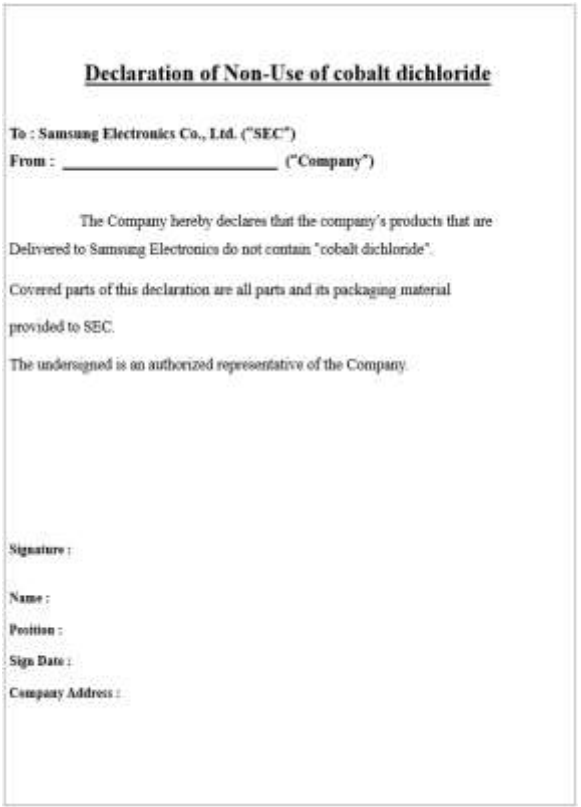
The undersigned is an authorized representative of the Company.

Signature: _____ Date: _____

Print Name and Title :
Company Name and Address :

Letter of Warranty

### Declaration of Non-Use of cobalt dicloride



**Declaration of Non-Use of cobalt dichloride**

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

The Company hereby declares that the company's products that are Delivered to Samsung Electronics do not contain "cobalt dichloride".

Covered parts of this declaration are all parts and its packaging material provided to SEC.

The undersigned is an authorized representative of the Company.

**Signature :**

**Name :**

**Position :**

**Sign Date :**

**Company Address :**

Declaration of Non-Use