

Chemical Substances Management Guidelines

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Introduction

This Chemical Substances Management Guidelines (hereinafter; Guideline) is summarized to make sure the acceptable threshold level and the extension period to the substances of being used and delivered in the products of Orbray Co., Ltd. (hereinafter; Orbray or our company), and we commit implementing the control chemical substances firmly.

As Orbray policy, basically we do not purchase those parts, materials, etc. as prohibited substances for use being defined in this Guideline.

Please understand our purpose of this Guideline as well as the Green Procurement Guideline shown in our homepage, and we look forward to your cooperation to our environmental protection activity.

1. Scope

This Guideline is applied to all the products, the sub-materials and the packaging materials which Orbray purchase, including outsourcing designing and manufacturing parts, materials, etc.

< Subjected parts, materials, etc.>

- Parts (Electric parts, Mechanical parts, PCB, Packaging materials, Low materials, etc.)
- Work in process (Module and Assembly parts, etc.)
- Screws
- Constituent material of sub-material used in the products (Adhesive tapes, Soldering materials, Adhesive agent, etc.)

2. Application and exception

- (1) This Guideline has been established based on major laws and regulations but all is not concluded. Then we may apply to relating domestic and international laws and regulations and other necessary important matter of the industry guideline, etc. when

we purchase parts, materials, etc.

(2) Basically, it is the rule to follow this Guideline, however, depending on some unavoidable reasons from a supplier, Orbray business unit may be acceptable that supplier's criteria.

(3) Followings are free from this Guideline application.

-The environmental impact substances using for research and development purpose.

However, this Guideline is applied when they turned to be used in products.

3. Terms and definitions

Terms and definitions are defined in this Guideline.

(1) Parts, materials, etc. consisting of the products

Are Materials, Parts, Sub-materials, Electronics parts, Cutting processing parts, Resin parts, Press parts, Jointing materials, Solders, Glasses, Optical fibers, Wires, and Other parts, materials, sub-materials, service parts, packaging materials, etc. of using into Orbray manufacturing products

(2) Contain

Whatever it is intentional or unintentional, it means such situation that something substances are added, mixed and adhered to the parts, materials, etc. consisting the products. Impurity is including also.

(3) Impurity

Substances contained in natural materials and cannot be completely removed through refinement as industrial materials or cannot be technically removed occurred through residues of synthesis reaction.

(4) Intentional addition (use)

Prefer to the continuous use (addition) of a chemical substance in order to give a certain characteristics, appearance and quality to the process of manufacturing the products; Includes where these substances are added or used.

The value is designated as "acceptable threshold level", and when containing for the purpose of keeping and improving the function, appearance and quality, it must not

exceed its density level.

Please disclose its content details of Intentional addition (use) on “Controlled substance”

(5) RoHS Directive

Environmental impact substances, chemical substance regulation of the EU (Since 27/JAN/2003), had been defined that 6 banning substances should not to be included and used in the products, and this time, the revised RoHS (2011/65/EU) starts being effective with Phthalic-based 4 substances on the date of 4/JUN/2015 as Directive (EU/2015/863), and the banned substances come to 10 in total.

(6) REACH or Registration, Evaluation, Authorization and Restriction of Chemicals

Chemical substance regulation of the EU (18th December, 2006 in force). Comprehensive management system of chemical substance to register, assess, permit, restrict and control the chemical substance used in the formed and mixed parts, materials, etc. appropriately. Information of the environmental impact substances is disclosed, communicated and shared in the supply chain.

(7) SVHC or Substances of Very High Concern

Those substances which make very high anxiety against person's health and environment such as carcinogenic, toxic substance, persistent, etc.

(8) PBT Substances

PBT (Persistent, Bioaccumulative, Toxic) substances are persistent, highly accumulative, and toxic substances.

(9) Chemical substance

The substance made the compound which exists in the substance or nature which consists of element simple substances, or by manufacturing process.

Example: The controlled substance by the CAS number or EC number

(10) Preparation

Preparation is with which two or more chemical substances were mixed intentionally.

(11) Forming products

Items of specific shape, appearance or design created in final use rather than functions provided by its chemical composition.

(12) Exemption

Substances which are excluded by laws and regulations because there is no substitution (Substances, materials and technical matter) and no other use and component presently.

4. Control of environmental impact substances

The substances using to the materials, the parts, etc. which constitute the products are categorized into "Prohibited substances" and "Controlled substances".

However, there is possibility that "Prohibited substances" and "Controlled substances" may be changed depending on future laws and regulations or social situation.

Since all the substance name is not covered, please refer the following notes.

(Notes)

Orbray's "Prohibited substances" and "Controlled substances" are conformed to the followings: Annex-A and Annex-B of "Joint Industry Guideline (JIG) for disclosure including chemical substances information regarding Electric/Electronics device products" and also "JAMP Declarable Substances Reference List" issued by Joint Article Management Promotion-consortium.

REACH includes Substances of Very High Concern (hereinafter; SVHC), and SVHC are often revised, so please refer the following information.

- Home page of "Ministry of the Environment"
<https://www.env.go.jp/en/policies.html>
- "Business assist site for small and medium-sized companies J-Net21"
<http://j-net21.smrj.go.jp/index.html>
- "Article Management Promotion Consortium"
<https://chemsherpa.net/english>

(1) "Prohibited substance"

The chemical substances which are regulated by overseas and domestic typical laws and which are prohibited to use by Orbray.

Regarding these substances, they are required to no intentional use in the product, sub-materials, the packaging materials, etc., of which Orbray purchases. Also, it is needed that the impurity content value is less than the regulatory value shown below. (Submission of chemical analysis data, contents information and safety data such as SDS are needed.)

In case that it exceeded the limited value or is considered any possibility of intentional use, please clarify and disclose the reasons of intentional use or the contents percentage.

Acceptable threshold levels of the parts, materials, etc. depends on each the material.

(2) “Controlled substances”

The one should be reduced as much as possible from the material, the parts, etc. which constitute Orbray products, and the one should be grabbed and controlled appropriately those contents percentage, areas and intentional use reasons (i.e. it is needed for characteristic stability and there is no substitution technically at present.)

(3) “Prohibition of use of the recycling resin mold materials”

Recycling use of resin mold materials is prohibited.

However, if the value of control subject substance content level was lower than the acceptable threshold level defined by this Guideline, it is acceptable.

In this case, please submit data which Orbray requests (Example: Chemical analysis data, Product property evaluation report, etc.)

For the details, please contact our purchasing section in charge.

(4) “Preferential measures”

If it was requested to use prohibited substances because there is no possibility to use any substitute, etc. please contact our purchasing section in charge.

Judgement of license to use shall be done that the substance is free from any laws and regulations.

(5) “Laws and regulations of the environmental impact substances” (Reference)

Substances	Major laws and regulations
Cadmium and its compounds	EU RoHS Directive
	EU REACH Regulation Annex XVII
	Resources Effective Utilization Promotion Act
Lead and its compounds	EU RoHS Directive
	EU REACH Regulation Annex XII
	Resources Effective Utilization Promotion Act
	Proposition 65 of California Law
Mercury and its compounds	EU RoHS Directive
	EU REACH Regulation Annex XVII
	Resources Effective Utilization Promotion Act
Hexavalent chromium compounds	EU RoHS Directive
	EU REACH Regulation Annex XVII
	Resources Effective Utilization Promotion Act
Polybrominated Biphenyls (PBBs)	The Chemical Substances Control Law
	EU RoHS Directive
	EU REACH Regulation Annex XVII
	EU POPs Regulation Annex I
Polybrominated Diphenylethers (PBDEs)	The Chemical Substances Control Law
	EU RoHS Directive
	EU REACH Regulation Annex XVII
	EU POPs Regulation Annex I
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Asbestos	Industrial Safety and Health Law
	EU REACH Regulation Annex XVII
Ozone-layer-depleting substances (Incl. Fluorine based greenhouse gasses)	Ozone Layer Protection Law
	Montreal Protocol
	US-Chlorofluorocarbon Tax

Substances	Major laws and regulations
Tin compounds (TBT, TPT, TBTO, DBTs, DOTs)	The Chemical Substances Control Law
	EU REACH Regulation Annex XVII
Specific azo compound	EU REACH Regulation Annex XVII
Mirex	The Chemical Substances Control Law
Short-chain chlorinated paraffins (C10-13)	EU POPs Regulation Annex I
Polychlorinated biphenyls (PCBs) and specific substitutes	The Chemical Substances Control Law
	EU POPs Regulation Annex I
Polychlorinated naphthalene (PCN) (with 2 or more chlorine atom)	The Chemical Substances Control Law
	EU POPs Regulation Annex I
Polychlorinated terphenyls (PCT)	EU REACH Regulation Annex XVII
Formaldehyde	Germany-Chemicals Prohibition Ordinance
	Denmark-Formaldehyde Regulation
Cobalt chloride	EU REACH Regulation Annex XVII
Arsenic and its compounds	EU REACH Regulation Annex XVII
Specific benzotriazole	The Chemical Substances Control Law
Perfluorooctane sulfonic acids (PFOS) and its derivatives	The Chemical Substances Control Law
	EU POPs Regulation Annex I
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Perfluorohexane sulfonic acid (PFHxS) including its salts and related substances	EU POPs Regulation Annex I
Phthalic esters	EU REACH Regulation Annex XVII
	EU RoHS Directive
Dimethyl fumarate (DMF)	EU REACH Regulation Annex XVII
Polycyclic aromatic hydrocarbon (PAH)	EU REACH Regulation Annex XVII
Perfluorocarboxylic acids containing 9 to 14 carbon atoms in the chain(C9-C14 PFCAs),their salts and C9-C14 PFCA related substances	EU REACH Regulation Annex XVII
Hexabromo-cyclododecan (HBCDD)	EU REACH Regulation Annex XVII
	The Chemical Substances Control Law
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)

Substances	Major laws and regulations
Tris(2-chloroethyl)phosphate	EU REACH Regulation Candidate substances of very high concern for Authorization
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Beryllium oxide	EU WEEE Directive2002/96/EC
Nickel and its compounds	EU REACH Regulation Annex XVII
Hexachlorobutadiene (HCBd)	The Chemical Substances Control Law
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Pentachlorothiophenol(PCTP)	The Chemical Substances Control Law
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Phenol, isopropylated phosphate (3:1) (PIP (3:1))	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
2,4,6-tris(tert-butyl)phenol(2,4,6-TTBP)	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Hexachlorobenzene(HCB)	The Chemical Substances Control Law
	EU POPs Regulation Annex I
Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds	EU POPs Regulation Annex I
1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo [12.2.1.16,9.02,13.05,10] octadeca-7,15-diene (“Dechlorane Plus”™)	EU REACH Regulation Candidate substances of very high concern for Authorization
Long-Chain Perfluoroalkyl Carboxylate (LCPFAC) Chemicals and Perfluoroalkyl sulfonic acid compounds	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Mineral oil aromatic hydrocarbons (MOAH) comprising from 1 to 7 aromatic rings Hydrocarbons saturated with mineral oil (MOSH) containing 16 to 35 carbon atoms	French law
Perchlorates	Perchlorate Pollution Prevention Law of CA, USA 2003
Radioactive substance	Act on Prevention of Radiation Hazards due to Radioisotopes, etc.
	Act for the Control of Nuclear Materials, Nuclear Fuel Materials and Atomic Reactors
Polyvinyl chloride (PVC) and compounds	US industry standard JS709
Tris (2-chloroethyl) phosphate	EU REACH regulation Annex XVII
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Brominated flame retardants (other than PBBs, PBDEs, HBCDDs)	EU REACH regulation Annex XVII
	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)

Substances	Major laws and regulations
Polyvinyl chloride (PVC) and compounds	US industry standard JS709
Chlorinated flame retardants(CFR)	(Standard) JEDEC JS709、IEC 61249-2-21、IPC-4101
Medium-chain chlorinated paraffins (MCCP) C14~C17	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
Perfluorohexane acids (PFHxA) including its salts and related substances	EU REACH regulation Annex XVII
Per- and poly- fluoroalkyl substances (PFAS)	Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)
4,4'-Isopropylidenediphenol (Bisphenol A; BPA)	EU REACH Regulation Candidate substances of very high concern for Authorization
	Proposition 65 of California Law
4,4'-sulphonyldiphenol (Bisphenol S; BPS)	EU REACH Regulation Candidate substances of very high concern for Authorization

* 1) The content is as of September 2023, and the regulation is sometimes changed. Please refer to the latest information of the respective regulation for farther confirmation.

5. Environmental impact substances

(1) List of prohibited substances

·Cadmium and its compounds

Representative of chemical substances	CAS code	Applications
Cadmium	7440-43-9	-Contact materials -Surface treatment, Plating bath, Plating brighteners, -Pigments, Paint coating, Inks and Coloring agents, -Battery (Incl. Nickel-Cadmium and Alkaline batteries) -Low melting point solder -Fuses, etc. -Stabilizer used for plastics , Rubber or Film
Cadmium oxide	1306-19-0	
Cadmium sulfide	1306-23-6	
Cadmium chloride	10108-64-2	
Cadmium sulfate	10123-36-4	
<p>【Thresholds】</p> <ul style="list-style-type: none"> • Not more than 100 ppm (or 75ppm*) in homogeneous material • Plastics (rubber are included), paint, ink 5ppm • Total consistency weight is not more than 100 ppm of cadmium, mercury, hexavalent chromium and lead in wrapping homogeneous material • Carbon zinc batteries (except button cells), Alkaline manganese batteries (except button cells), Nickel hydrogen rechargeable batteries (except button cells) : less than 10 ppm of battery • All other batteries : less than 20 ppm of battery • Intentional use prohibited <p>【Exemptions】</p> <ul style="list-style-type: none"> • Refer to the exemption items list of heavy metals regulated by RoHS Directive. <p>*RoHS and REACH control subject substances</p>		

·Lead and its compounds

Representative of chemical substances	CAS code	Applications
Lead	7439-92-1	<ul style="list-style-type: none"> • Solders, Brazing metal, • Electric contact material, Erosion-resistant surface treatment, Plating bath • Pigments, Paints, Inks, Dye • Vulcanization accelerator , lubricants , Hardeners , Stabilizers for plastics incl. rubber • Glass, Special optical glass, Optical glass
Trilead tetraoxide	1314-41-6	
Lead (II) acetateTrihydrate	6080-56-4	
Lead (II) sulfate	7446-14-2 15739-80-7	
Lead catbonate	598-63-0	
Lead (II) Titanium oxide	12060-00-3	
Lead stearate	1072-35-1 7428-48-0	
Other lead compounds and alloys		
<p>【Thresholds】</p> <ul style="list-style-type: none"> • Inclusion of more than 1,000 ppm homogeneous materials • Cables/cords (including plug and connector) with thermoset or thermoplastic coatings : not more than 300 ppm of surface coating material • Parts and materials for consumer products designed or intended primarily for children 12 years of age or younger : less than 100 ppm of product • Paint and similar surface coatings of toys and other articles intended for use by children : less than 90 ppm of surface coating material • Packaging material: Inclusion of not more than 100ppm by total weight concentration of cadmium, mercury, hexavalent chromium and lead is prohibited. • Alkaline manganese batteries (including button cells) : less than 40 ppm of battery • Zinc air button cells : less than 500 ppm of battery • Intentional use prohibited <p>【Exemptions】</p> <ul style="list-style-type: none"> • Refer to “Exempted application list of restricted heavy metals by RoHS directive”. ※Please confirm of the information from our purchaser in charge, or confirm our announcement ※RoHS and REACH control subject substances 		

·Mercury and its compounds

Representative of chemical substances	CAS code	Applications
Mercury	7439-97-6	<ul style="list-style-type: none"> ▪ Battery ▪ Pigments
Mercuric chloride	7487-94-7	
Mercury (II) oxide	21908-53-2	
<p>【Thresholds】</p> <ul style="list-style-type: none"> ▪ Inclusion of more than 1000 ppm or 75ppm as impurity in homogeneous materials ▪ Packaging material: Inclusion of not more than 100ppm by total weight concentration of cadmium, mercury, hexavalent chromium and lead is prohibited. ▪ All batteries : Intentionally added or less than 1 ppm of battery ▪ Intentional use prohibited <p>【Exemptions】</p> <ul style="list-style-type: none"> ▪ Refer to the exemption items list of heavy metals regulated by RoHS Directive. <p>*RoHS and REACH control subject substances</p>		

·Hexavalent chromium compounds

Representative of chemical substances	CAS code	Applications
Sodium dichromate	10588-01-9	<ul style="list-style-type: none"> ▪ Pigments ▪ Inks ▪ Paints ▪ Surface treatment for rust ▪ Catalyst
Chromium trioxide	1333-82-0	
Potassium dichromate	7778-50-9	
Potassium chromate	7789-00-6	
<p>【Thresholds】</p> <ul style="list-style-type: none"> ▪ Inclusion of not more than 1,000 ppm as impurity in homogeneous materials ▪ Packaging material: Inclusion of not more than 100ppm by total weight concentration of cadmium, mercury, hexavalent chromium and lead is prohibited. ▪ Intentional use prohibited <p>【Exemptions】</p> <p>Up to 0.75wt% Hexavalent chromium is allowed used for anticorrosion agent of the carbon steel cooling system in the absorption refrigerators.</p> <p>※1. Depending on the product, it is allowed as Residual impact substances. Please confirm of the information from our purchaser in charge or our announcement.</p> <p>※RoHS control subject substance</p>		

· Polybrominated Biphenyls (PBBs)

Representative of chemical substances	CAS code	Applications
Decabromobiphenyl	13654-09-6	· Flame retardant
3,3',4,4'-bromobiphenyl	77102-82-0	
2,2',4,5'-bromobiphenyl	67888-96-4	
【Thresholds】 <ul style="list-style-type: none"> · Intentional use prohibited · Inclusion of not more than 1,000 ppm in homogeneous materials ※RoHS and REACH control subject substance		

· Polybrominated Diphenylethers (PBDEs)

Representative of chemical substances	CAS code	Applications
Pentabromodiphenyl ether	32534-81-9	· Flame retardant
Octabromodiphenyl ether	32536-52-0	
Decabromodiphenyl ether	1163-19-5	
【Thresholds】 <ul style="list-style-type: none"> · Intentional use prohibited · Inclusion as impurity material: Not more than 1,000 ppm in homogeneous materials · Other than electrical and electronic equipment (including packaging material) : Concentration of the constituent article must not more than 500 ppm. ※RoHS and REACH control subject substance ※Toxic Substances Control Act (TSCA) Regulations - controlled substances designated in Section 6		

Asbestos

Representative of chemical substances	CAS code	Applications
Asbestos	1332-21-4	<ul style="list-style-type: none"> · Insulators · Frictional materials · Heat insulators
Actinoit	77536-66-4	
Amosite	12172-73-5	
Chrysotile	12001-29-5	
Tremolite	77536-68-6	
【Thresholds】 <ul style="list-style-type: none"> · Intentional use prohibited ※REACH control subject substance		

- Ozone-layer-depleting substances(Incl. Fluorine-based greenhouse gas)
HCFCs, HFCs, SF6, PFCs

Representative of chemical substances	Applications
Substances defined by the Montreal Protocol Annex A (G I ,G II) Annex B (G I ,G II ,GIII) Annex C (G I ,G II) Annex E (G I)	<ul style="list-style-type: none"> • Cooling medium • Extinguishing agents • Cleaning agents
【Thresholds】 <ul style="list-style-type: none"> • Intentional use prohibited 	

- Tin compounds (TBT • TPT • TBTO • DBTs • DOTs)

Representative of chemical substances	CAS code	Applications
Tributan-1-ylstannyl methacrylate	2155-70-6	<ul style="list-style-type: none"> • Paints, Pigments • Stabilizer • Antiseptic • Extinguishing agents
Triphenylstannyl acetate	900-95-8	
Triphenyltin fatty acid (C9-11) salt	18380-71-7 47672-31-1 94850-90-5	
Bis(tributyltin) phthalate	4782-29-0	
Bis(tributyltin) oxide*	56-35-9	
2,4,6-Tris(tert-butyl) phenol	732-26-3	
Dibutyltin (DBT)compounds		
Dioctyltin (DOT)compounds		
【Thresholds】 <ul style="list-style-type: none"> • Intentional use prohibited • Inclusion of not more than 1,000 ppm in homogeneous materials <p>※Dioctyltin compounds (DOT): This applies to cases that are used for textile, leather products or their parts intended to come into contact with the skin directly, and the case that are used for two component room temperature vulcanisation molding kits (RTV-2 moulding kits).</p> <p>※REACH control subject substance</p> <p>※Toxic Substances Control Act (TSCA) Regulations - controlled substances designated in Section 6</p>		

· Specific azo compound

Representative of chemical substances	CAS code	Applications
Benzidine	92-87-5	<ul style="list-style-type: none"> • Pigments • Dyes • Coloring agents
3,3-Dichlorobenzidine	91-94-1	
o-Aminoazotoluene	97-56-3	
o-Anisidine	90-04-0	
4-(Phenyldiazenyl)aniline	60-09-3	
<p>【Thresholds】</p> <ul style="list-style-type: none"> • Intentional use prohibited • Additives of textiles and leathers not more than 30 ppm(or 0.003 wt%). <p>Note : Azo compound forming specific amine is azo group (-N=N-) being contained in dye or pigment, and this is cut and generated amines (carcinogenic substances) by enzyme action of human body.</p> <p>※REACH control subject substance</p>		

· Mirex

Representative of chemical substances	CAS code	Applications
Mirex	2385-85-5	<ul style="list-style-type: none"> • Pesticide
Pentachlorobenzene	608-93-5	
<p>【Thresholds】</p> <ul style="list-style-type: none"> • Intentional use prohibited <p>Another name : Perchloropentacyclo [5.3.0.0(2,6).0(3,9).0(4,8)] decane</p>		

· Short-chain chlorinated paraffins (CP) (C10~13)

Representative of chemical substances	CAS code	Applications
Short-chain chlorinated paraffins (C10-C13)	85535-84-8	<ul style="list-style-type: none"> • PVC plasticizer • Flame retardant • Greases
<p>【Thresholds】</p> <ul style="list-style-type: none"> • Intentional use prohibited • Inclusion of not more than 1,000 ppm in homogeneous materials <p>※REACH control subject substance</p>		

· Polychlorinated biphenyls (PCBs) and specific substitutes

Representative of chemical substances	CAS code	Applications
Polychlorinated biphenyls (All isomers and homologs)	1336-36-3	<ul style="list-style-type: none"> ▪ Heat medium ▪ lubricant ▪ Insulation oil for condenser
Monomethyl-tetrachloro-diphenyl methane (Ugilec 141)*	76253-60-6	
Monomethyl-dichloro-diphenyl methane (Ugilec 121,Ugilec 21)*	81161-70-8	
Monomethyl-dibromo-diphenyl methane (DBBT)*	99688-47-8	
【Thresholds】 <ul style="list-style-type: none"> ▪ Intentional use prohibited ▪ Prohibition adherence, interfusion or generation during in production line ※REACH control subject substance		

· Polychlorinated naphthalenes (PCN) (with 2 or more chlorine atom)

Representative of chemical substances	CAS code	Applications
Polychlorinated naphthalene	70776-03-3	<ul style="list-style-type: none"> ▪ Lubricant ▪ Antiseptic ▪ Paint
Pentachloronaphthalene	1321-46-8	
【Thresholds】 <ul style="list-style-type: none"> ▪ Prohibition of intentional use 		

· Polychlorinated terphenyls (PCT)

Representative of chemical substances	CAS code	Applications
Polychlorinated terphenyls (PCTs) (All isomers and homologs)	61788-33-8	<ul style="list-style-type: none"> ▪ Lubricant ▪ Electrolytic solution ▪ Antiseptic ▪ Paint ▪ Plasticizer
【Thresholds】 <ul style="list-style-type: none"> ▪ Intentional use prohibited ※REACH control subject substance		

• Formaldehyde

Representative of chemical substances	CAS code	Applications
Formaldehyde	50-00-0	<ul style="list-style-type: none"> • Pesticide or Corrosion protection for woods, etc. Adhesive
【Thresholds】 <ul style="list-style-type: none"> • Intention use prohibited : addition into Wooden products (Plywood, Particle board and MDF) or wooden parts • Not more than 75ppm of textile product weight 		

• Cobalt chloride

Representative of chemical substances	CAS code	Applications
Cobalt chloride	34240-80-7 7646-79-9	<ul style="list-style-type: none"> • Humidity indicator in the desiccant, etc.
Cobalt (II) chloride hexahydrate	7791-13-1	
Cobalt (III) chloride	10241-04-0	
【Thresholds】 <ul style="list-style-type: none"> • Intentional use prohibited ※REACH control subject substance 		

• Arsenic and its compounds

Representative of chemical substances	CAS code	Applications
Diarsenic trioxide	1327-53-3	<ul style="list-style-type: none"> • Semiconductor substrates • Glass antifoaming agents • Pigments • Paints • Frame retardants
Diarsenic pentoxide	1303-28-2	
【Thresholds】 <ul style="list-style-type: none"> • Content: not more than 1000ppm • Intentional use prohibited ※Depending on the product, there is the case to be specified as prohibition substances. Please be compliant to the memorandum from our purchasing section. ※REACH control subject substance 		

• Specific benzotriazole

Representative of chemical substances	CAS code	Applications
2-(2H-1,2,3-benzotriazol-2-yl)-4,6-di-tert-butylphenyl)	3846-71-7	<ul style="list-style-type: none"> ▪ Ultraviolet ray inhibitors ▪ Adhesives ▪ Paints: ▪ Filler for sealing (Ultraviolet absorber)
2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol(UV-328)	25973-55-1 ※	
2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3 ※	
2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1 ※	
【Thresholds】 <ul style="list-style-type: none"> ▪ Intentional use prohibited ▪ Concentration in the constituent article : not more than 1000 ppm (about above ※) 		

• Perfluorooctane sulfonic acid (PFOS) and its derivatives

Representative of chemical substances	CAS code	Applications
Perfluorooctanesulfonic acid	1763-23-1	<ul style="list-style-type: none"> ▪ Hydraulic fluid ▪ Metal plating ▪ Cleaning materials ▪ Coating materials for paper and packaging materials
Perfluorooctane sulfonate fluoride	307-35-7	
Heptadecafluoro-1-octanesulfonic acid lithium salt	29457-72-5	
Ammonium nonadecafluorononanesulphonate	17202-41-4	
【Thresholds】 <ul style="list-style-type: none"> ▪ Intentional use prohibited <p>* REACH and POPs Treaty control subject substances</p>		

Stockholm treaty on Persistent Organic Pollutants (POPs Treaty)

http://www.meti.go.jp/policy/chemical_management/int/pops.html

- Perfluorohexanesulfonic acid (PFHxS), its salts, and PFHxS-related substances

Representative of chemical substances	CAS code	Applications
Please refer to the Ministry of Economy, Trade and Industry website.	111393-39-6 1270179-82-2 1427176-17-7 68555-92-0	<ul style="list-style-type: none"> Metal plating Cleaning agents Coating materials for paper and packaging Firefighting foam
【Thresholds】 <ul style="list-style-type: none"> Intentional use prohibited Less than 25 ppb in molding quality amount or mixture Total amount of PFHxS related substances less than 1000ppb 		

*:For more information on perfluorohexanesulfonic acid (PFHxS), its salts, and PFHxS-related substances, Please refer to the Ministry of Economy, Trade and Industry website.

POPs Convention (Stockholm Convention on Persistent Organic Pollutants)

http://www.meti.go.jp/policy/chemical_management/int/pops.html

Survey on PFHxS and its salts and PFHxS-related substances

https://www.meti.go.jp/policy/chemical_management/int/pops_5.html

- Phthalic esters

Representative of chemical substances	CAS code	Applications
Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	<ul style="list-style-type: none"> Plasticizers Dyes Paints Pigments Inks Adhesives
Dibutyl phthalate (DBP)	84-74-2	
Butyl benzyl phthalate (BBP)	85-68-7	
Diisobutyl phthalate (DIBP)	84-69-5	
Diisononyl phthalate (DINP)	28553-12-0 68515-48-0	
Diisodecyl phthalate (DIDP)	26761-40-0 68515-49-0	
Di-N-octyl phthalate (DNOP)	117-84-0	
Di-N-hexyl phthalate (DnHP)	84-75-3	
Dicyclohexyl phthalate (DCHP)	84-61-7	
【Thresholds】 <ul style="list-style-type: none"> Not more than 1000 ppm in homogeneous materials Intentional use prohibited <p>※REACH control subject substance Phthalic acid (DEHP) (DBP)(BBP)(DIBP)(DCHP) Toxic Substances Control Act (TSCA) Regulations - controlled substances designated in Section 6</p>		

· Dimethyl fumarate (DMF)

Representative of chemical substances	CAS code	Applications
Dimethyl fumarate	624-49-7	<ul style="list-style-type: none"> · Desiccant agent · Fungicides
【Thresholds】 <ul style="list-style-type: none"> · Inclusion of more than 0.1 ppm in homogeneous materials is prohibited. · Intentional use prohibited 		

· Polycyclic aromatic hydrocarbon (PAH)

Representative of chemical substances	CAS code	Applications
Benzo (a) pyrene (BaP)	50-32-8	<ul style="list-style-type: none"> · Pigments in the rubbers or plastics (Impurity agents)
Benzo (e) pyrene (BeP)	192-97-2	
Benzo (a) anthracene (BaA)	56-55-3	
Chrysene (CHR)	218-01-9	
Benzo (b) fluoranthene (BbFA)	205-99-2	
Benzo (j) fluoranthene (BjFA)	205-82-3	
Benzo (k) fluoranthene (BkFA)	207-08-9	
Benzo (a,h) anthracene (DBAhA)	53-70-3	
【Thresholds】 <ul style="list-style-type: none"> · Rubber or plastic parts that come into direct, prolonged or repetitive skin or oral cavity contact, except those for toys or childcare articles : less than 1 ppm of the plastic or rubber part · Rubber or plastic parts of toys and childcare articles that come into direct, prolonged or repetitive skin or oral cavity contact : less than 0.5 ppm of the plastic or rubber part · Other than the above : Concentration in the constituent article : not more than 1000 ppm 		

- Perfluorocarboxylic acids containing 9 to 14 carbon atoms in the chain (C9-C14 PFCAs), their salts and C9-C14 PFCA-related substances

Representative of chemical substances	CAS code	Applications
Perfluorononanoic Acid	375-95-1	<ul style="list-style-type: none"> Hydraulic fluid Metal plating Cleaning materials Coating materials for paper and packaging materials
Nonadecafluorodecanoic Acid	335-76-2	
Henicosafuoroundecanoic Acid		
【Thresholds】 Intentional use prohibited as a constituent of another substance, mixtures, articles 1. Less than 25 ppb in total of C9-C14PFCAs and their salts 2. Less than 260 ppb in total of C9-C14PFCAs related substances		

- Hexabromo-cyclododecan (HBCDD)

Representative of chemical substances	CAS code	Applications
Hexabromocyclododecane (HBCD)	25637-99-4	<ul style="list-style-type: none"> Flame retardant
	4736-49-6	
	65701-47-5	
	138257-17-7	
	138257-18-8	
	138257-19-9	
	169102-57-2	
	678970-15-5	
	678970-16-6	
	678970-17-7	
1,2,5,6,9,10-Hexabromocyclododecane	3194-55-6	
α -Hexabromocyclododecane	134237-50-6	
β -Hexabromocyclododecane	134237-51-7	
γ -Hexabromocyclododecane	134237-52-8	
【Thresholds】 <ul style="list-style-type: none"> Intentional use prohibited Not more than 75ppm in the product 		

·Tris (2-chloroethyl) phosphate

Representative of chemical substances	CAS code	Applications
Tris(2-chloroethyl) phosphate (TCEP)	115-96-8	· Flame retardant
Tris(1-chloro-2-propyl) phosphate (TCPP)	13674-84-5	
Tris(1,3-dichloro-2-propyl) Phosphate (TDCPP)	13674-87-8	
Phenol, isopropylated phosphate (3:1) (PIP (3:1))	68937-41-7	
<p>【Thresholds】</p> <ul style="list-style-type: none"> · Not more than 1000ppm in the product · Prohibited substance candidate ※ Some items may be excluded depending on the product. Please comply with the contact from the purchasing office. <p>※ REACH regulation subjected substance Toxic Substances Control Act (TSCA) Regulations - controlled substances designated in Section 6</p>		

·Beryllium oxide

Representative of chemical substances	CAS code	Applications
Beryllium oxide	1304-56-9	<ul style="list-style-type: none"> · Heatsink · Ceramics · Alloy (e.g. Beryllium copper)
<p>【Thresholds】</p> <ul style="list-style-type: none"> · Provide the content when Inclusion of more than 1,000 ppm in materials · Intentional use prohibited (※) ※ Please follow the indication from our Purchasing section because there may be something excluded depending on our products. 		

·Nickel and its compounds

Representative of chemical substances	CAS code	Applications
Nickel	7440-02-0	<ul style="list-style-type: none"> · Stainless steel alloy · Battery · Plating
<p>【Thresholds】</p> <ul style="list-style-type: none"> · Intentional use prohibited for the parts touching to the skin for a long time <p>【Exemption】</p> <ul style="list-style-type: none"> · The parts, materials, etc. not touching the skin for a long time. <p>* REACH regulation subjected substance.</p>		

- U.S. Toxic Substances Control Act (TSCA) Regulations Substances
The U.S. Environmental Protection Agency (U.S. EPA), under Section 6 of the Toxic Substances Control Act (TSCA) regulations, prohibits the use of substances with persistent, bioaccumulative and toxic (PBT) properties.
Prohibition on mixtures and articles containing the following substances.
- *There is a possibility that the number of substances subject to this regulation will increase in the future.

Chemical substances	CAS code
Decabromodiphenyl ether (DecaBDE)	1163-19-5
Hexachlorobutadiene (HCB)	87-68-3
Pentachlorothiophenol (PCTP)	133-49-3
Phenol, isopropylated phosphate (3:1) (PIP (3:1)) ※	68937-41-7 (other)
2,4,6-tris(tert-butyl) phenol (2,4,6-TTBP)	732-26-3
<p>【Substance that is the subject of ※】</p> <ul style="list-style-type: none"> • Bis (isopropylphenyl) phenyl phosphate • Isopropylphenyl diphenyl phosphate <p>【Applications】</p> <ul style="list-style-type: none"> • Additives to improve the rigidity of rubber parts • Electrical and textile products, • Flame retardants for electrical products, textiles, plastic housings, etc. • Used in the combustion of waste fuels • Halogenated aliphatic hydrocarbon lubricants, greases and industrial coatings, • Adhesives, plasticizers and flame retardants for plastic products • Additives for fuels, etc., and maintenance oils and lubricants for automobiles and machinery 	

•Hexachlorobenzene(HCB)

Representative of chemical substances	CAS code	Applications
Hexachlorobenzene(HCB)	118-74-1	—
<p>【Thresholds】</p> <ul style="list-style-type: none"> • Intentional use prohibited • Not more than 10 ppm in articles and mixtures <p>※Hexachlorobenzene may be present as an impurity in several substances, mixtures, and articles, including pesticides, chlorinated solvents, inks, coatings, paints and toners, wood applications, fiber applications and plastics.</p>		

· Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds

Representative of chemical substances	CAS code	Applications
perfluorooctanoic acid	335-67-1	<ul style="list-style-type: none"> ▪ Water repellent ▪ Oil repellent ▪ Fire extinguishing agents ▪ Photoresist ▪ Paints
<p>【Thresholds】</p> <ul style="list-style-type: none"> ▪ Intentional use prohibited ▪ less than 25 ppb in the amount in article or mixture. ▪ In the case of PFOA-related compounds (※), the concentration of one or a combination of these compounds must be 1000 ppb or less. <p>※Perfluorooctanoic acid (PFOA), its salts and PFOA-related compounds' means the following:</p> <ul style="list-style-type: none"> (i) perfluorooctanoic acid, including any of its branched isomers; (ii) its salts; (iii) PFOA-related compounds which, for the purposes of the Convention, are any substances that degrade to PFOA, including any substances (including salts and polymers) having a linear or branched perfluoroheptyl group with the moiety (C7F15)C as one of the structural elements. <p>The following compounds are not included as PFOA-related compounds:</p> <ul style="list-style-type: none"> (i) C8F17-X, where X = F, Cl, Br; (ii) fluoropolymers that are covered by CF3[CF2]n-R', where R'=any group, n> 16; (iii) perfluoroalkyl carboxylic acids (including their salts, esters, halides and anhydrides) with ≥ 8 perfluorinated carbons; (iv) perfluoroalkane sulfonic acids and perfluoro phosphonic acids (including their salts, esters, halides and anhydrides) with ≥ 9 perfluorinated carbons; (v) perfluorooctane sulfonic acid and its derivatives (PFOS), as listed in in Annex I of the EU POPs Regulation 		

· 1,6,7,8,9,14,15,16,17,17,18,18-Dodecachloropentacyclo [12.2.1.16,9.02,13.05,10] octadeca-7,15-diene (“Dechlorane Plus”™)

Representative of chemical substances	CAS code	Applications
-	-	<ul style="list-style-type: none"> ▪ Adhesives, encapsulants and polymers ▪ Flame retardants
<p>【Thresholds】</p> <ul style="list-style-type: none"> ▪ Intentional use prohibited 		

· Long-Chain Perfluoroalkyl Carboxylate (LCPFAC) Chemicals and Perfluoroalkyl sulfonic acid compounds

Representative of chemical substances	CAS code	Applications
-	-	<ul style="list-style-type: none"> Adhesives, encapsulants and polymers Flame retardants
<p>【Thresholds】</p> <ul style="list-style-type: none"> Parts with surface coating ※ and materials for coating molded products <p>Materials: Intentional use prohibited</p> <p>※"Surface coating" means a material used as a thin film, which is formed on the surface of an article as a protective, decorative, or functional film.</p>		

· Mineral oil aromatic hydrocarbons (MOAH) comprising from 1 to 7 aromatic rings
Hydrocarbons saturated with mineral oil (MOSH) containing 16 to 35 carbon atoms

Representative of chemical substances	CAS code	Applications
-	-	<ul style="list-style-type: none"> 紙と段ボールの包装に使用される印刷インク
<p>【Thresholds】</p> <ul style="list-style-type: none"> Packaging materials, printed matter: <ul style="list-style-type: none"> Mineral oil aromatic hydrocarbons (MOAH) containing 1 to 7 aromatic rings Less than 1000ppm in ink (※10000ppm in ink until December 31, 2023) Mineral oil aromatic hydrocarbons containing 3 to 7 aromatic rings (MOAH) <ul style="list-style-type: none"> Less than 1 ppm in ink Mineral oil saturated hydrocarbons containing 16 to 35 carbon atoms (MOSH) <ul style="list-style-type: none"> Less than 1000ppm in ink 		

(2) List of controlled substances

· Perchlorates

Representative of chemical substances	CAS code	Applications
Lithium perchlorate	7791-03-9	<ul style="list-style-type: none"> Flame retardant Plasticizing agent
<p>【Thresholds】</p> <ul style="list-style-type: none"> Disclosure of contents Inclusion of more than 0.006 ppm in the products 		

· Radioactive substance

Representative of chemical substances	CAS code	Applications
Uranium-238	7440-61-1	<ul style="list-style-type: none"> · Optical property (Thorium) · Measuring equipment · Detector · Gauges · Smoke detector
Radon	10043-92-2	
Cesium(Cs-137)	7440-46-2	
Strontium(Sr-90)	7440-24-6	
Thorium (Th-232)	7440-29-1	
【Thresholds】 <ul style="list-style-type: none"> · Disclosure of contents when Intentional use 		

· Brominated flame retardants (other than PBBs, PBDEs, HBCDDs)

Representative of chemical substances	CAS code	Applications
3,5,3,5-Tetrabromobisphenol A (TBBA)	79-94-7	<ul style="list-style-type: none"> · Flame retardants · Multilayer printed circuit board
Tetrabromo bisphenol S	39635-79-5	
Bromo / chloro paraffins	68955-41-9	
Polydibromostyrene	31780-26-4	
Chlorinated, brominated phosphoric acid esters	125997-20-8	
【Thresholds】 <ul style="list-style-type: none"> · Disclosure of contents when Intentional use 		

· Polyvinyl chloride (PVC) and compounds

Representative of chemical substances	CAS code	Applications
Polyvinyl chloride (PVC) and Polyvinyl chloride (PVC) compounds	9002-86-2	<ul style="list-style-type: none"> · Resin material · Insulating plate · Heat shrinkable tube · Packaging materials (Adhesive tape, Carton box, etc.)
【Thresholds】 <ul style="list-style-type: none"> · Disclosure of contents (Threshold is not less than 1000ppm) · Prohibition of intentional use (*) <p>* It may be set up as a prohibited substance depending on products. Please follow the information from our purchaser in charge.</p> 【Exemptions】 <ol style="list-style-type: none"> 1. Binder for resins 2. Speaker grilles 3. AC cable 4. Blended parts of vinyl chloride copolymers, Polyvinyl chloride and other polymers. 5. Cables for professional application not for general purpose (e.g. Camera cables and microphone cables of broadcasting stations) 		

· Chlorinated flame retardants(CFR)

Representative of chemical substances	CAS code	Applications
cis-1,2- Dichloroethylene	156-59-2	<ul style="list-style-type: none"> · Flame retardant materials used for Layered PCB · Plasticizing agent for parts
【Thresholds】 <ul style="list-style-type: none"> · Layered PCB not more than 900ppm · Intentional use prohibited 		

· Medium-chain chlorinated paraffins (MCCP) C14~C17

Representative of chemical substances	CAS code	Applications
-	-	<ul style="list-style-type: none"> · Flame retardants · Plasticizers for plastics · Lubricants for metal molding · Cooling agents
【Thresholds】 <ul style="list-style-type: none"> · Disclosure of contents when Intentional use or more than 1000ppm 		

· Perfluorohexane acids (PFHxA) including its salts and related substances

Representative of chemical substances	CAS code	Applications
-	-	<ul style="list-style-type: none"> · Flame retardants · Plasticizers for plastics · Lubricants for metal molding · Cooling agents
【Thresholds】 <ul style="list-style-type: none"> · Disclosure of contents when Intentional use 		

· Per- and poly- fluoroalkyl substances (PFAS)

Representative of chemical substances	CAS code	Applications
-	-	<ul style="list-style-type: none"> · Lithium-ion batteries · Semiconductor manufacturing and automotive parts · Machinery and equipment · Medical equipment, etc. Wide range of applications
【Thresholds】 <ul style="list-style-type: none"> · Disclosure of contents when Intentional use *Generic name for about 10,000 organofluorine compounds 		

· 4,4'-Isopropylidenediphenol (Bisphenol A; BPA)

Representative of chemical substances	CAS code	Applications
4,4'-Isopropylidenediphenol (Bisphenol A; BPA)	80-05-7	<ul style="list-style-type: none"> ▪ Thermal paper ▪ Thermoplastic elastomer ▪ Phenolic resin ▪ Fluoropolymers ▪ Epoxy resins
【Thresholds】 <ul style="list-style-type: none"> ▪ Disclosure of contents when Intentional use or more than 1000ppm 		

· 4,4'-sulphonyldiphenol (Bisphenol S; BPS)

Representative of chemical substances	CAS code	Applications
4,4'-sulphonyldiphenol (Bisphenol S; BPS)	80-09-1	<ul style="list-style-type: none"> ▪ Thermal paper ▪ Thermoplastic elastomer ▪ Phenolic resin ▪ Fluoropolymers ▪ Epoxy resins
【Thresholds】 <ul style="list-style-type: none"> ▪ Disclosure of contents when Intentional use or more than 1000ppm 		

(3) Exemption of Heavy Metals Restricted by RoHS Directives

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
Mercury and its compounds			
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):		
1(a)	For general lighting purposes < 30 W	2.5mg	2023/2/24 ■
1(b)	For general lighting purposes > 30 W and < 50 W	3.5mg	2023/2/24 ■
1(c)	For general lighting purposes > 50 W and < 150 W	5mg	2023/2/24 ■
1(d)	For general lighting purposes > 150 W	15mg	2023/2/24 ■
1(e)	For general lighting purposes with circular or square structural shape and tube diameter < 17 mm	Not more than 7mg	2023/2/24 ■
1(f)-I	For lamps designed to emit mainly light in the ultraviolet spectrum	5mg	2027/2/24
1(f)-II	For special purposes	5mg	2025/2/24
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20 000 h	3.5mg	2023/8/24
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)	4mg	2023/2/24 ■
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter > 9 mm and < 17 mm (e.g. T5) :	3mg	2023/8/24
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and < 28 mm (e.g. T8) :	3.5mg	2023/8/24
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12) :	3.5mg	2023/2/24 ■
2(a)(5)	Tri-band phosphor with long lifetime (> 25,000 h) :	5mg	2023/2/24 ■
2(b)	Mercury in other fluorescent lamps (per lamp):		
2(b)(1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12)	Not more than 10mg	2012/4/13 ■
2(b)(2)	Non-linear halophosphate lamps (all diameters)	Not more than 15mg	2016/4/13 ■
2(b)(3)	Tri-band phosphor except a long length fluorescent lamp and a tube diameter > 17mm	(e.g. T9) Not more than 15mg	2025/2/24
2(b)(4)-I	Lamps for other general lighting and special purposes (e.g. Induction lamps) Not more than 15mg	Not more than 15mg	2025/2/24
2(b)(4)-II	Lamps emitting mainly light in the ultraviolet spectrum	Not more than 15mg	2027/2/24
2(b)(4)-III	Emergency lamps	Not more than 15mg	2027/2/24
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes (per lamp):		
3(a)	Short length (not more than 500 mm) Not more than 3.5mg	Not more than 3.5mg	2025/2/24

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
3(b)	Medium length (500 mm < and \leq 1,500 mm) Not more than 5mg	Not more than 5mg	2025/2/24
3(c)	Long length (1,500 mm <): Not more than 13mg	Not more than 13mg	2025/2/24
4(a)	Mercury in other low pressure discharge lamps	Not more than 15mg	2023/2/24 ■
4(a)-I	Mercury in low pressure non-phosphor coated discharge lamps, where the application requires the main range of the lamp-spectral output to be in the ultraviolet spectrum: up to 15 mg mercury may be used per lamp	Not more than 15mg	2027/2/24
4(b)	Mercury in High Pressure Sodium (vapor) lamps for general lighting purposes (per burner) in lamps with improved color rendering index Ra > 60:		
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 > 80: P \leq 105 W: 16 mg may be used per burner	Not more than 16mg	2027/2/24
4(b)-I	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P \leq 155W Not more than 30mg	Not more than 30mg	2023/2/24 ■
4(b)-II	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: 155W < P \leq 405W Not more than 40mg	Not more than 40mg	2023/2/24 ■
4(b)-III	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60: P > 405W Not more than 40mg	Not more than 40mg	2023/2/24 ■
4(c)	Mercury in other High Pressure Sodium (vapor) lamps for general lighting purposes (per burner):		
4(c)-I	P \leq 155W Not more than 20mg	Not more than 20mg	2027/2/24
4(c)-II	155W < P \leq 405W Not more than 25mg	Not more than 25mg	2027/2/24
4(c)-III	P > 405 W : Not more than 25mg	Not more than 25mg	2027/2/24
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)		2015/4/13 ■
4(e)	Mercury in metal halide lamps (MH)		2027/2/24
4(f)	I) Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex II) Mercury in high pressure mercury vapour lamps used in projectors where an output \geq 2000 lumen ANSI is required		Category 1-7, 10 Under extended consultation * Category 8, 9, 11 I) 2025/2/24 II) 2027/2/24

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
4(f)-I	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex		2025/2/24
4(f)-II	Mercury in high pressure mercury vapour lamps used in projectors where an output \geq 2000 lumen ANSI is required		2027/2/24
4(f)-III	Mercury in high pressure sodium vapour lamps used for horticulture lighting		2027/2/24
4(f)-IV	Mercury in lamps emitting light in the ultraviolet spectrum		2027/2/24
4(g)	Mercury in hand crafted luminous discharge tubes used for signs, decorative or architectural and specialist lighting and light-artwork, where the mercury content shall be limited as follows: (a) 20 mg per electrode pair + 0,3 mg per tube length in cm, but not more than 80 mg, for outdoor applications and indoor applications exposed to temperatures below 20 °C; (b) 15 mg per electrode pair + 0,24 mg per tube length in cm, but not more than 80 mg, for all other indoor applications. Expires on 31 December 2018		2018/12/31 ■
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	Not more than 30mg	2010/7/1 ■
Hexavalent chromium compounds			
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0.75Wt % in the cooling solution		Category 1-7, 10 2020/3/5 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
9(a)-I	Up to 0,75% hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators (including minibars) designed to operate fully or partly with electrical heater, having an average utilised power input < 75 W at constant running conditions		2021/3/5 ■
9(a)-II	Up to 0,75% hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators: - designed to operate fully or partly with electrical heater, having an average utilised power input \geq 75 W at constant running conditions; - designed to fully operate with non-electrical heater.		Category 1-7, 10 Under extended consultation *

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
9(a)-III	Up to 0.7 % by weight of hexavalent chromium as an anticorrosion agent in the working fluid of the carbon steel sealed circuit of gas absorption heat pumps for space and water heating.		Category 1-7, 10 2026/12/31
Lead and its compounds			
5(a)	Lead in glass of cathode ray tubes		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
5(b)	Lead in glass of fluorescent tubes not exceeding 0.2 Wt%		Category 1-7, 10 Under extended consultation * Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
6(a)	Lead as an alloying element in steel for machining purposes and in galvanized steel containing up to 0.35Wt% lead		Category 1-7, 10 2019/6/30 Category 8, 9, 11 Under extended consultation *
6(a)-I	Lead as an alloying element in steel for machining purposes containing up to 0,35 % lead by weight and in batch hot dip galvanised steel components containing up to 0,2 % lead by weight		Category 1-7, 10 Under extended consultation *
6(b)	Lead in aluminum alloy containing up to 0.4 Wt%		Category 1-7, 10 2019/6/30 Category 8, 9, 11 Under extended consultation *
6(b)-I	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight, provided it stems from lead-bearing aluminium scrap recycling		Category 1-7, 10 Under extended consultation *
6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight		Category 1-7, 10 Under extended consultation *
6(c)	Lead in copper alloy containing up to 4 Wt%		Under extended consultation *
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85Wt% or more lead) Exception: Application for Electric and electronics waste of EU WEEE Directive (Category 7, 10)		Under extended consultation *

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
7(c)-I	Electrical and electronic components containing lead in a glass-ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound. Exception: Application for the matters covered by the regulation of the lead content in the battery of China (Category 7, 10)		Under extended consultation *
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher		Under extended consultation *
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC. Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013		2013/1/1 ■
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors which are part of integrated circuits or discrete semiconductors		Category 1-7, 10 2021/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),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		Category 1-7, 10 2018/7/5 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),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. May be used in spare parts for EEE placed on the market before 24 September 2010		2010/9/24 ■
11(b)	Lead used in other than C-press compliant pin connector systems. Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013		2013/1/1 ■

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
12	Lead as a coating material for the thermal conduction module C-ring May be used in spare parts for EEE placed on the market before 24 September 2010		2010/9/24 ■
13(a)	Lead in white glasses used for optical applications		Under extended consultation *
13(b)	Lead in filter glasses and glasses used for reflectance standards		Category 1-7, 10 2018/7/5 Category 8, 9, 11 Under extended consultation *
13(b)-(I)	Lead in ion coloured optical filter glass types		Category 1-7, 10 Under extended consultation *
13(b)-(III)	Cadmium and lead in glazes used for reflectance standards		Category 1-7, 10 Under extended consultation *
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. Expired on 1 January 2011 and after that date may be used in spare parts for EEE placed on the market before 1 January 2011		2011/1/1 ■
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages		Category 1-7, 10 2020/2/29 Category 8, 9, 11 Under extended consultation *
15(a)	Lead in solders to complete a viable electrical connection between the semiconductor die and carrier within integrated circuit flip chip packages where at least one of the following criteria applies: -a semiconductor technology node of 90 nm or larger; -a single die of 300 mm ² or larger in any semiconductor technology node; -stacked die packages with die of 300 mm ² or larger, or silicon interposers of 300 mm ² or larger.		Category 1-7, 10 Under extended consultation *
16	Lead in linear incandescent lamps with silicate coated tubes		2013/9/1 ■
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
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 MgSi2O7 :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 (BaSi2O5:Pb)		Category 1-7, 10,11 Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
18(b)-1	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP (BaSi2O5:Pb) when used in medical phototherapy equipmen		Applies to categories 5 and 8, excluding applications covered by entry 34 of Annex IV, and expires on 21 July 2021.
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL)		2011/6/1 ■
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)		2011/6/1 ■
21	Lead in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses and cadmium		Category 1-7, 10 2020/2/29 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
21(c)	Lead in printing inks for the application of enamels on other than borosilicate glasses		Category 1-7, 10 2021/7/29
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less May be used in spare parts for EEE placed on the market before 24 September 2010		2010/9/24 ■
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors		Category 1-10 Under extended consultation * Category 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		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
26	Lead oxide in the glass envelope of black light blue lamps		2011/6/1 ■
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers		2010/9/24 ■
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC		Category 1-7, 10, 11 Under extended consultation * Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 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)		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes		Category 1-7, 8, 9, 10 Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation * Category 11 2024/7/21
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
34	Lead in cermet-based trimmer potentiometer elements		Under extended consultation *
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body		Category 1-7, 10 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
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		Category 1-7, 10 2022/3/31 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 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 \geq 15 litres; or -with engine total displacement < 15 litres and the engine is designed to operate in applications where the time between signal to start and full load is required to be less than 10 seconds; or regular maintenance is typically performed in a harsh and dirty outdoor environment, such as mining, construction, and agriculture applications.		Category 11 Under extended consultation *
44	Lead in solder of sensors, actuators, and engine control units of combustion engines within the scope of Regulation (EU) 2016/1628 of the European Parliament and of the Council, installed in equipment used at fixed positions while in operation which is designed for professionals, but also used by non-professional users		Category 11 Under extended consultation *
45	Lead diazide, lead styphnate, lead dipicramate, orange lead (lead tetroxide), lead dioxide in electric and electronic initiators of explosives for civil (professional) use and barium chromate in long time pyrotechnic delay charges of electric initiators of explosives for civil (professional) use.		Category 11 2026/4/20
Cadmium and its compounds			
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012		2012/1/1 ■
8(b)	Cadmium and its compounds in electrical contacts		Category 1-7, 10 2020/2/29 Category 8, 9, 11 Under extended consultation *

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
8(b)-I	Cadmium and its compounds in electrical contacts used in: -circuit breakers, -thermal sensing controls, - thermal motor protectors (excluding hermetic thermal motor protectors), -AC switches rated at: -6 A and more at 250 V AC and more, or -12 A and more at 125 V AC and more, -DC switches rated at 20 A and more at 18 V DC and more, and -switches for use at voltage supply frequency ≥ 200 Hz.		Category 1-7, 10 Under extended consultation *
13(b)	Cadmium in filter glasses and glasses used for reflectance standards		Category 1-7, 10 2018/7/5 Category 8, 9, 11 Under extended consultation *
13(b)-(II)	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex		Category 1-7, 10 Under extended consultation *
13(b)-(III)	Cadmium and lead in glazes used for reflectance standards		Category 1-7, 10 Under extended consultation *
21	Lead and Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses		Category 1-7, 10 2020/2/29 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),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		2021/7/21 ■
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses		2021/7/21 ■
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 and more		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide		Category 1-7, 10 2016/7/21 Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3),11 2024/7/21

No.	Exemptions	Range	Regulatory exclusion period (yyyy/mm/dd)
39	Cadmium in colour converting II-VI LEDs (< 10 µg Cd per mm ² of light-emitting area) for use in solid state illumination or display systems		2018/11/20 ■
39(a)	Cadmium selenide in downshifting cadmium-based semiconductor nanocrystal quantum dots for use in display lighting applications (< 0,2 µg Cd per mm ² of display screen area)		Under extended consultation *
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment		2013/12/31 ■
Other Chemical Substances			
43	<p>Bis(2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed:</p> <p>(a)30 % by weight of the rubber for (i)gasket coatings; (ii)solid-rubber gaskets; or (iii)rubber components included in assemblies of at least three components using electrical, mechanical or hydraulic energy to do work, and attached to the engine. (b)10 % by weight of the rubber for rubber-containing components not referred to in point (a). For the purposes of this entry, “prolonged contact with human skin” means continuous contact of more than 10 minutes duration or intermittent contact over a period of 30 minutes, per day.</p>		Category 11 2024/7/31

■: Indicates exemptions that have expired in all categories, been discontinued, or replaced by other items.

*1: Categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments.

*2: Category 8 in vitro diagnostic medical devices.

*3: Category 9 industrial monitoring and control instruments.

Note) Each exclusion item of EU-RoHS regulation listed in this list is the one as of 2023/1/30, not the one guarantees the contents of a law. Please refer to the law original for the latest information.

Note)* Exclusion extension application may be submitted, and it is admitted for 1 year acceptable period (Extension due date) from a law expired date.

The exemption for lead and its compound inclusions is scheduled to expire sequentially

from July 21, 2024 to July 21, 2026.

For Category 1-7 and 10, they are during consultation for partial extension.

(4) Exemption of RoHS Directive Annex IV

(Medical devices; Category 8 and Monitoring and control instruments; Category 9)

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
Mercury and its compounds		
Equipment utilising or detecting ionising radiation		
1	Lead, cadmium and mercury in detectors for ionising radiation.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *
Sensors, detectors and electrodes		
1c	Lead, cadmium and mercury in infra-red light detectors.	Under extended consultation *
1d	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
Others		
16	Mercury in very high accuracy capacitance and loss measurement bridges and in high frequency RF switches and relays in monitoring and control instruments not exceeding 20 mg of mercury per switch or relay.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
35	Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 2017/7/22	2024/7/21
42	Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation.	2026/6/30
Hexavalent chromium compounds		
Others		
30	Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers. Hexavalent chromium in alkali dispensers used to create to create photocathodes in X-ray image intensifiers placed on the EU market before 2020/1/1	2019/12/31 ■

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
31	Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices placed on the market before 22 July 2014 and used in category 8 equipment placed on the market before 22 July 2021, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.	2017/11/5■
31a	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	Category 8, 9(*1) Under extended consultation * Category 8(*2) Under extended consultation * Category 9(*3) 2024/7/21
Lead and its compounds		
Equipment utilising or detecting ionising radiation		
1	Lead, cadmium and mercury in detectors for ionising radiation.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *
2	Lead bearings in X-ray tubes.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	Under extended consultation *
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.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *
5	Lead in shielding for ionising radiation.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
6	Lead in X-ray test objects.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
7	Lead stearate X-ray diffraction crystals.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
Sensors, detectors and electrodes		
1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	Under extended consultation *
1b	Lead anodes in electrochemical oxygen sensors.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *
1c	Lead, cadmium and mercury in infra-red light detectors.	Under extended consultation *
1d	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
Others		
10	Lead and cadmium in atomic absorption spectroscopy lamps.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *
11	Lead in alloys as a superconductor and thermal conductor in MRI.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
12	Lead and cadmium in metallic bonds creating superconducting magnetic circuits in MRI, SQUID, NMR (Nuclear Magnetic Resonance) or FTMS (Fourier Transform Mass Spectrometer) detectors.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2021/6/30 Category 9(*3) Under extended consultation *
13	Lead in counterweights.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
14	Lead in single crystal piezoelectric materials for ultrasonic transducers.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
15	Lead in solders for bonding to ultrasonic transducers.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
17	Lead in solders in portable AED (automated external defibrillator).	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μm .	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
19	Lead in Liquid crystal on silicon (LCoS) displays.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
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.	2021/6/30 ■
23	Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation.	2021/6/30 ■

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
24	Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers.	2019/12/31 ■
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.	2021/6/30 ■
26	Lead in — solders on printed circuit boards, — termination coatings of electrical and electronic components and coatings of printed circuit boards, — solders for connecting wires and cables, — solders connecting transducers and sensors, that are used durably at a temperature below – 20 °C under normal operating and storage conditions.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2021/6/30 Category 9(*3) Under extended consultation *
27	Lead in — solders, — termination coatings of electrical and electronic components and printed circuit boards, — connections of electrical wires, shields and enclosed connectors, which are used in (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy.	2027/6/30
28	Lead in solders for mounting cadmium telluride and cadmium zinc telluride digital array detectors to printed circuit boards. Expires on 31 December 2017.	2017/12/31 ■
29	Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	Category 8, 9(*1) Under extended consultation * Category 8(*2), 9(*3) 2021/6/30
31	Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices placed on the market before 22 July 2014 and used in category 8 equipment placed on the market before 22 July 2021, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.	2017/11/5 ■
31a	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	Category 8, 9(*1) Under extended consultation * Category 8(*2) Under extended consultation * Category 9(*3) 2024/7/21
32	Lead in solders on printed circuit boards of detectors and data acquisition units for Positron Emission Tomographs (PET) which are integrated into Magnetic Resonance Imaging (MRI) equipment.	2019/12/31 ■

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
33	Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa and IIb mobile medical devices other than portable AED (automated external defibrillator).	2016/6/30 a) ■ 2020/12/31 b) ■
34	Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP (BaSi2O5:Pb) phosphors.	2021/7/22 ■
36	Lead used in other than C-press compliant pin connector systems for industrial monitoring and control instruments. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 2021/1/1.	2020/12/31 ■
37	Lead in platinized platinum electrodes used for conductivity measurements where at least one of the following conditions applies: (a) wide-range measurements with a conductivity range covering more than 1 order of magnitude (e.g. range between 0,1 mS/m and 5 mS/m) in laboratory applications for unknown concentrations; (b) measurements of solutions where an accuracy of +/- 1 % of the sample range and where high corrosion resistance of the electrode are required for any of the following: (i) solutions with an acidity < pH 1; (ii) solutions with an alkalinity > pH 13; (iii) corrosive solutions containing halogen gas; (c) measurements of conductivities above 100 mS/m that must be performed with portable instruments.	2025/12/31
38	Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of computed tomography and X-ray systems. May be used after that date in spare parts for CT and X-ray systems placed on the market before 2020/1/1.	2019/12/31 ■
39	Lead in micro-channel plates (MCPs) used in equipment where at least one of the following properties is present: (a) a compact size of the detector for electrons or ions, where the space for the detector is limited to a maximum of 3 mm/MCP (detector thickness + space for installation of the MCP), a maximum of 6 mm in total, and an alternative design yielding more space for the detector is scientifically and technically impracticable; (b) a two-dimensional spatial resolution for detecting electrons or ions, where at least one of the following applies: (i) a response time shorter than 25 ns; (ii) a sample detection area larger than 149 mm ² ; (iii) a multiplication factor larger than 1,3 × 10 ³ . (c) a response time shorter than 5 ns for detecting electrons or ions; (d) a sample detection area larger than 314 mm ² for detecting electrons or ions; (e) a multiplication factor larger than 4,0 × 10 ⁷ . The exemption expires on the following dates: - For medical devices and monitoring and control instruments; - F or in-vitro diagnostic medical devices; - F for industrial monitoring and control instruments.	Under extended consultation *

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
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 2020/12/31. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.	2020/12/31 ■
41	Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases.	2022/3/31 ■
48	electrical connections to these wires	2027/6/30
Cadmium and its compounds		
Equipment utilising or detecting ionising radiation		
1	Lead, cadmium and mercury in detectors for ionising radiation.	Category 8, 9(*1) Under extended consultation * Category 8(*2) 2023/7/21 Category 9(*3) Under extended consultation *
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
Sensors, detectors and electrodes		
1a	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	Under extended consultation *
1c	Lead, cadmium and mercury in infra-red light detectors.	Under extended consultation *
Others		
9	Cadmium in helium-cadmium lasers.	Category 8, 9(*1) 2021/7/21 Category 8(*2) 2023/7/21 Category 9(*3) 2024/7/21
10	Lead and cadmium in atomic absorption spectroscopy lamps.	2021/7/21 ■
12	Lead and cadmium in metallic bonds creating superconducting magnetic circuits in MRI, SQUID, NMR (Nuclear Magnetic Resonance) or FTMS (Fourier Transform Mass Spectrometer) detectors.	2021/6/30 ■
20	Cadmium in X-ray measurement filters.	2021/7/21 ■
21	Cadmium in phosphor coatings in image intensifiers for X-ray images until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.	2019/12/31 ■

No.	Exemptions	Regulatory exclusion period (yyyy/mm/dd)
31	Lead, cadmium and hexavalent chromium in reused spare parts, recovered from medical devices placed on the market before 22 July 2014 and used in category 8 equipment placed on the market before 22 July 2021, provided that reuse takes place in auditable closed-loop business-to-business return systems, and that the reuse of parts is notified to the consumer.	2017/11/5■
31a	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	Category 8, 9(*1) Under extended consultation * Category 8(*2) Under extended consultation * Category 9(*3) 2024/7/21
43	Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required.	Category 9(*3) 2023/7/15
44	Cadmium in radiation tolerant video camera tubes designed for cameras with a centre resolution greater than 450 TV lines which are used in environments with ionising radiation exposure exceeding 100 Gy/hour and a total dose in excess of 100kGy.	Category 8, 9(*1) 2027/3/31 Category 9(*2) 2027/3/31
Other Chemical Substances		
31a	Lead, cadmium, hexavalent chromium, and polybrominated diphenyl ethers (PBDE) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, or electron microscopes and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	Category 8, 9(*1) Under extended consultation * Category 8(*2) Under extended consultation * Category 9(*3) 2024/7/21
45	Bis(2-ethylhexyl) phthalate (DEHP) in ion-selective electrodes applied in point of care analysis of ionic substances present in human body fluids and/or in dialysate fluids	Category 8(*2) 2028/7/21
46	Bis(2-ethylhexyl) phthalate (DEHP) in plastic components in MRI detector coils.	Category 8(*2) Under extended consultation *
47	Bis(2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP) and diisobutyl phthalate (DIBP) in spare parts recovered from and used for the repair or refurbishment of medical devices, including in vitro diagnostic medical devices, and their accessories, provided that the reuse takes place in auditable closed-loop business-to-business return systems and that each reuse of parts is notified to the customer.	Category 8, 9 2027/6/30

■: Indicates exemptions that have expired in all categories, been discontinued, or replaced by other items.

*1: Categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments.

*2: Category 8 in vitro diagnostic medical devices.

*3: Category 9 industrial monitoring and control instruments.

Legal expiration date

- 21 July 2021 for general category 8, 9
- 21 July 2023 for category 8 in vitro diagnostic medical devices;
- 21 July 2024 for category 9 industrial monitoring and control instruments
- 21 July 2024 for category 11 (Other EEE (electrical and electronic equipment))

(The expiration date is as stated above but has not been determined at this time.)

Regarding the items which the regulatory exemption deadline is short, please contact our corresponding purchasing section

*The “Legal expiration dates” refers to a legal time limit after which the concerned application will no longer be exempted. When, however, an exemption renewal application is submitted within 18 months prior to the expiration date, the exemption will be placed “Under discussion.”

**These exemptions are to remain valid for one year after the publication of the EU’s Official Journal that reports new requirements amended this time. When an exemption renewal application is submitted afterwards, the exemption will remain valid until its expiration date given in this table. The old exemptions will be revoked after their legal expiration dates without further extension (one year after Official Journal publication).

Both for the exemption deadlines in paragraphs (3) and (4) are legal dates.

If different deadlines are specified for several categories, the exemption dates of EU Directive 2011/65/EU (EU RoHS) are subject to change, so please refer to the latest status of each.

Reference information: Implementation of the RoHS Directive (European Commission Website)

6. Requests to our suppliers

(1) Content survey of chemical substances

For perceiving the situation of the environmental impact substance and its volume containing in parts, materials, etc. delivered, please be understood that our suppliers may be required to submit the chemical substance contents report.

·ICP Data

·SDS (Safety Data Sheet)

·Content substance investigation sheet (chemSHERPA, other contents tables)

* For the detail of chemSHERPA, please visit the following HP.

chemSHERPA is a common scheme for information communication of available product containing chemicals by METI-led whole origin supply chain and is the system to manage chemicals contained by a product properly and response to the regulation which expands continually.

·Ministry of Economy, Trade and Industry (METI)

http://www.meti.go.jp/policy/chemical_management/other/douga_gaiyou.pdf

·Survey slip and the Guideline relation (in Article Management Promotion-consortium)

<https://chemsherpa.net/>

<https://chemsherpa.net/chemSHERPA/index.html>

<Note>

MSDSplus/AIS input assistance tool updating and disclosure have been finished at 17:00, 29 June 2018 and it is necessary to update investigation by the latest chemSHERPA.

Please also be understood that our suppliers may be required to submit of the use and reduction survey/report when there was any environmental impact substance in those manufacturing lines, also.

In the event that it is considered its necessity, please be understood for our audit to your manufacturing lines.

(2) Memorandum of Green Procurement

To ensure the environmental impact substance reduction and appropriate control of chemical substance in the delivered parts, materials, etc. please be understood to conclude “Memorandum of Green Procurement” in case.

(3) Certificate of Non-Use of Prohibited Substance

- 1) Prohibited substances specified are cannot be used in all the delivery products (parts, materials, etc., etc.) except that the products are permitted according to the exceptional measures or the current regulatory value is exceptionally accepted under the condition until accomplishment of the target year.
- 2) Please submit the documents “Certificate of Non-Use of Prohibited Substance” as to certify above when we requested.

(Notes)

When a prohibited substance is contained or used in your lines, please inform our corresponding purchasing section beforehand and discuss that handling.

When it comes to be clear after delivery that a prohibited substance is contained or used in your lines, please contact our corresponding purchasing section at once and please discuss that handling.

(4) Disclosure of information

Regarding the material, parts, composition component, etc. which delivered to us, please submit the following corresponding data promptly when we request.

- 1) Material data (Consisting Of parts and components: Stainless steel, Copper, Aluminum, etc.)
- 2) Content material data (Elaborated in parts and components: Names of chemical substance, Content, Environmental risks, etc.)
- 3) Other data (in the event when Orbray judged it necessary)

(5) Handling of Information

The material and contained substance information of the products received from our suppliers is shared within Orbray.

Please be understood that we may disclose that information to our customer, etc. when required as part of Orbray product relating information.

If you have any inconvenience to disclose, please contact our corresponding purchasing section.

7. Revision history

Rev.	Description	Establishment	Enforcement
0	Initial edition after change the company name and reviewed the regulatory exclusion period	22 / JAN / 2018	01 / FEB / 2018
1	Review the deadline of application exemption substrates. Phthalic acid contact pollution. Handling of PFHxS relating substrate. NPT apply this book also.	01 / APR / 2019	01 / MAY / 2019
2	Addition of PBT substance to Definition of terms. Addition of 5 substances as controlled substances designated in Section 6 of Toxic Substances Control Act (TSCA), U.S. Environmental Protection Agency(EPA)	01 / NOV / 2022	01 / NOV / 2022
2.1	Company name and logo changed	06 / JAN / 2023	06 / JAN / 2023
3	Update RoHS Exemption Information	20 / APR / 2023	20 / APR / 2023
4	<ol style="list-style-type: none"> 1. Update information link of related organizations 2. Deletion of major customers name 3. Review of notes in the list of laws and regulations on environmentally hazardous substances (main reference laws and regulations) (Chapter 4 (5)) 4. Unification of terminology: "addition" was changed to "intentional use". 5. Update of the list of laws and regulations on environmentally hazardous substances (main reference laws and regulations) (Chapter 4(5)) and each substance in the Management of Environmentally Hazardous Substances (Chapter 5) <ul style="list-style-type: none"> ▪ Cadmium and cadmium compounds: Deletion of solder components, addition of battery standards ▪ Lead and lead compounds: "PVC coated" changed to "coated with thermosetting/thermoplastic resin," detailed conditions for plastics, inks, and paints changed, and battery criteria added. ▪ Mercury and mercury compounds: Addition of battery standards. ▪ Hexavalent chromium compounds: Deleted "75 ppm or less as impurities in surface treatments, colorants, and plastic stabilizers. ▪ Polybrominated biphenyls (PBBs): Name changed. ▪ Polybrominated Diphenyl Ethers (PBDEs): (Name change/former) PBDEs, Addition of criteria other than for electrical and electronic equipment. ▪ Tin compounds (TBT, TPT, TBTO, DBTs, DOTs): Addition of dioctyltin (DOT) compounds, deletion of notes ▪ Polychlorinated naphthalenes (PCN) (with 2 or more 	27 / OCT / 2023	27 / OCT / 2023

	<p>chlorine atoms): Chlorine atom number changed / (Former) 3</p> <ul style="list-style-type: none"> ▪ Specific benzotriazole: Addition of UV-328, UV-350, UV-327, Addition of 1000ppm or less in the content in the constituent molding quality quantity ▪ Perfluorooctanesulfonic acid and its derivatives (PFOS): Name change: Perfluorooctanesulfonic acid (PFOS) and its salt and Perfluorooctanesulfonic acid fluoride (PFOSF)", Exemption was deleted, and the information confirmation address was consolidated to Stockholm Convention. ▪ Polycyclic Aromatic Hydrocarbons (PAHs): Changed to detailed criteria. ▪ Reaction products of N-phenylbenzeneamine with styrene and 2,2,4-trimethylpentene: deleted. ▪ Perfluorocarboxylic acids (C9-C14 PFCAs) containing 9-14 carbon atoms in a chain, their salts, and C9-C14 PFOA-related substances: Addition of omitted 25 ppb value ▪ Hexabromocyclododecane (HBCDD): name changed / (former) Hexabromocyclododecane (HBCDD) and all major diastereoisomers, specification value changed / former 1000ppm ▪ Nickel and Nickel Compounds: (Name changed/former) Nickel, "Contained in 1000ppm or less" deleted. ▪ Hexachlorobenzene (HCB): Addition ▪ Perfluorooctanoic acid (PFOA), its salts and PFOA related compounds: Addition. ▪ 1,6,7,8,9,14,15,16,17,17,18-Dodecachloropentacyclo [12.2.1.16,9.02,13.05,10] octadeca-7,15-dienes ("Decloramp Plus"TM): Addition ▪ Long-chain perfluoroalkyl carboxylic acids (LCPFACs) and perfluoroalkyl sulfonic acids: Addition. ▪ Aromatic hydrocarbon mineral oils with 1-7 aromatic rings (MOAH) and saturated hydrocarbon mineral oils with 16-35 carbon atoms (MOSH): Addition. ▪ Brominated Flame Retardants (excluding PBB, PBDE, and HBCDD): Name changed/formerly Brominated Flame Retardants (excluding PBB and PBDE) ▪ Chlorinated flame retardants (CFR): Addition Medium Chain Chlorinated Paraffins C14-17 (MCCP): Addition ▪ Perfluorohexanoic acid (PFHxA), its salts and related substances: Addition. ▪ Per/polyfluoroalkyl substances (PFAS): Addition. ▪ 4,4'-Isopropylidenediphenol (Bisphenol A) (BPA): Addition. ▪ 4,4'-Sulfonyldiphenol (Bisphenol S; BPS): Addition. 		
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