

List of Relevant Chemical Substances

Ver.4th

9 June, 2021
Mitutoyo Corporation

【Revision history】

Ver.	Revision date	Revised content
Ver.1 st	July 1, 2012	New publication
Ver.1.1	Nov. 21,2012	Clerical corrections
Ver.2 nd	August 25, 2017	<p>1. Management Standards for Chemical Substances</p> <ul style="list-style-type: none"> • Add No. • (2)Additional prohibited scheduled substance <p>(1)Prohibited substances No.2, No.3, No.11, and No.12 Revised laws and regulations (examples) No.6 Changed substance name from "some tributyltins (TBTs) and triphenyltins (TPTs)" to "trisubstituted organotin compounds" No.11 Change the number of chlorine from 3 or more to 2 or more No.18 to No.26 Add new</p> <p>(2)Additional prohibited scheduled substance No.1 to No.2 Add new</p> <p>(3)Controlled substances No.1 Changed substance name from "Beryllium" to "Beryllium Oxide" No.4 Addition of laws and regulations (examples) No.5 to No.7 Add new</p> <p>2. Restrictions on the use of prohibited substances Addition of new substances</p> <p>4. Prohibited substances for batteries Deleted "Button battery 2% or less" according to revised battery directive</p> <p>5-1. The exemptions of RoHS II (2011/65/EU) Annex III Updated as of the end of July 2017</p> <p>5-2. The exemptions of RoHS II (2011/65/EU) Annex IV Updated as of the end of July 2017</p> <p>6. Detailed lists of relevant chemical substances</p> <ul style="list-style-type: none"> • Add No. • Addition of new substance
Ver.3 rd	March 1, 2019	<p>1. Management Standards for Chemical Substances</p> <ul style="list-style-type: none"> (2)Delete prohibited substances, (1)Migration to prohibited substances <p>2. Restrictions on the use of prohibited substances Removed restrictions on the use of prohibited scheduled substance and moved to use restrictions on prohibited substances</p> <p>5-1. The exemptions of RoHS II (2011/65/EU) Annex III Updated as of the end of February 2019</p> <p>5-2. The exemptions of RoHS II (2011/65/EU) Annex IV Updated as of the end of February 2019</p>
Ver.4 th	June 9, 2021	<p>1. Management Standards for Chemical Substances</p> <p>(1)Prohibited substances</p> <ul style="list-style-type: none"> • Addition of item subject to scope • Addition of relevant regulations • Unification of words (Intentional addition) • No.27 to 30 divided in 4 Phthalates • No.32 add PFOA-related compounds • No.8, No.35 to 38 Addition of substances from US TSCA PBT final rules <p>(2)Controlled substances</p> <ul style="list-style-type: none"> • Addition of No.6 Di-n-octyl phthalate(DNOP) and No.8 Di-isodecyl phthalate (DIDP) <p>• Revision of the date from February 2019 to May 2021</p>

Ver.	Revision date	Revised content
Ver.4th	June 9, 2021	<p>(Continue)</p> <p>2. Restrictions on the use of prohibited substances</p> <ul style="list-style-type: none"> • Addition of prohibited applications and exemptions <p>4. Prohibited substances for batteries</p> <ul style="list-style-type: none"> • Addition of lead • Revision of scope • Revision of restricted value <p>5-1. The exemptions of RoHS II (2011/65/EU) Annex III</p> <ul style="list-style-type: none"> • Updated to the latest information as of the end of May 2021. <p>5-2. The exemptions of RoHS II (2011/65/EU) Annex IV</p> <ul style="list-style-type: none"> • Updated to the latest information as of the end of May 2021. <p>6. Detailed lists of relevant chemical substances</p> <p>(1)Prohibited substances</p> <ul style="list-style-type: none"> • No.27 to 30 divided in each of 4 Phthalates • No.8, No.35 to 38 Addition of substances from US TSCA PBT final rules <p>(2)Controlled substances</p> <ul style="list-style-type: none"> • Addition of No.6 Di-n-octyl phthalate(DNOP) and No.8 Di-isodecyl phthalate(DIDP)

1. Management Standards for Chemical Substances

(1) Prohibited substances

No.	Substance name	Scope	Control Value	Reference laws and regulations
1	Cadmium/Cadmium compounds	All, except batteries	100ppm	EU REACH Regulation (No.1907/2006) EU RoHS Directive (2011/65/EU) Law for the Promotion of Effective Utilization of Resources (Japan) Rules on the Restriction of Hazardous Substances in Electrical Appliances and Electronic Products Electronic Waste Recycling Act (California RoHS)
		Batteries	10ppm	EU Battery Directive (2006/66/EC) China GB 24427-2009, Limitation of mercury, cadmium and lead contents for alkaline and non-alkaline zinc manganese dioxide batteries
2	Chromium (VI) Compounds	All	1,000ppm	EU RoHS Directive(2011/65/EU) Law for the Promotion of Effective Utilization of Resources (Japan) Rules on the Restriction of Hazardous Substances in Electrical Appliances and Electronic Products Electronic Waste Recycling Act (California RoHS)
3	Lead/LeadCompounds	All, except batteries and Cables/cords with thermoset or thermoplastic coatings	1,000ppm	EU REACH Regulation (No.1907/2006) EU RoHS Directive(2011/65/EU) Law for the Promotion of Effective Utilization of Resources (Japan) Rules on the Restriction of Hazardous Substances in Electrical Appliances and Electronic Products Electronic Waste Recycling Act (California RoHS)
		Cables/cords with thermoset or thermoplastic coatings	300ppm of surface coating	Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) Case Law
		Batteries	40ppm	EU Battery Directive (2006/66/EC) China GB 24427-2009, Limitation of mercury, cadmium and lead contents for alkaline and non-alkaline zinc manganese dioxide batteries
4	Mercury/Mercury Compounds	All, except batteries	1,000ppm	EU RoHS Directive(2011/65/EU) Law for the Promotion of Effective Utilization of Resources (Japan) Rules on the Restriction of Hazardous Substances in Electrical Appliances and Electronic Products Electronic Waste Recycling Act (California RoHS)
		Batteries	1ppm	EU Battery Directive (2006/66/EC) Products containing Mercury Regulations SOR/2014-254 (Canada) Restrictions on the Manufacture, Import, and Sale of Dry Cell Batteries (Taiwan) China GB 24427-2009, Limitation of mercury, cadmium and lead contents for alkaline and non-alkaline zinc manganese dioxide batteries
5	Tributyltin oxide(TBTO)	All	Intentionally added	EU REACH Regulation (No.1907/2006) Japan Chemical Substance Control Law
6	Tri-substituted organostannic compounds	All	Intentionally added	EU REACH Regulation (No.1907/2006) Japan Chemical Substance Control Law
7	Polybrominated Biphenyls (PBBs)	All	1,000ppm	EU REACH Regulation (No.1907/2006) EU RoHS Directive(2011/65/EU) Law for the Promotion of Effective Utilization of Resources (Japan) Rules on the Restriction of Hazardous Substances in Electrical Appliances and Electronic Products
8	Polybrominated Diphenyl Ethers (PBDEs)	All	1,000ppm Intentionally added* ³ (DecaBDE)	EU REACH Regulation (No.1907/2006) EU RoHS Directive(2011/65/EU) Stockholm convention on Persistent Organic Pollutants Law for the Promotion of Effective Utilization of Resources (Japan) Japan Chemical Substance Control Law Rules on the Restriction of Hazardous Substances in Electrical Appliances and Electronic Products TSCA PBT Regulation (USA)
9	Polychlorinated Biphenyls (PCBs)	All	Intentionally added	Stockholm convention on Persistent Organic Pollutants EU Persistent Organic Pollutants (POPs) Regulation (No.2019/1021) EU REACH Regulation (No.1907/2006) Japan Chemical Substance Control Law USA Toxic Substances Control Act (TSCA)

(1) Prohibited substances

No.	Substance name	Scope	Control Value	Reference laws and regulations
10	Polychlorinated Terphenyls (PCTs)	All	Intentionally added	EU REACH Regulation (No.1907/2006)
11	Polychlorinated Naphthalenes and Other polychlorinated Naphthalenes (more than 2 chlorine atoms)	All	Intentionally added	Stockholm convention on Persistent Organic Pollutants EU Persistent Organic Pollutants (POPs) Regulation (No.2019/1021) Japan Chemical Substance Control Law
12	Short Chain Chlorinated Paraffins (SCCPs)(C10-13)	All	1,000ppm	EU REACH Regulation (No.1907/2006) Stockholm convention on Persistent Organic Pollutants EU Persistent Organic Pollutants (POPs) Regulation (No.2019/1021)
13	Asbestos	All	1,000ppm	EU REACH Regulation (No.1907/2006) Japan Industrial Safety and Health Law USA Toxic Substances Control Act (TSCA)
14	Azocolourants and azodyes which form certain aromatic amines	Textiles and Leather	30ppm	EU REACH Regulation (No.1907/2006)
15	Ozone Depleting Substances	All	Intentionally added	Montreal Protocol on Substances that Deplete the Ozone Layer EU Regulation on substances that deplete the ozone layer (No.1005/2009) Japan Ozone Layer Protection Law USA Clean Air Act
16	Formaldehyde	All	Intentionally added	Germany Chemikalien-Verbotsverordnung, Section Denmark Statutory Order No. 289 of June 22, 1983 USA/California CARB rule
		Textiles	75ppm	Austria BGB I 1990/194: Formaldehydverordnung §2, 12/2/1990
17	Radioactive Substances	All	Intentionally added	EU-D 【96/29/Euratom】 EU Directive 2013/59/Euratom Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors Japan Law Concerning Prevention from Radiation Hazards due to Radio-Isotopes, etc.
18	Hexabromocyclododecane (HBCD)	All	Intentionally added and 100ppm	Stockholm convention on Persistent Organic Pollutants EU Persistent Organic Pollutants (POPs) Regulation (No.2019/1021) Japan Chemical Substance Control Law
19	Dibutyltin compounds (DBT)	All	1,000ppm	EU REACH Regulation (No.1907/2006)
20	Diocetyl tin compounds (DOT)	・ textile and leather articles intended to come into contact with the skin, ・ two-component room temperature vulcanisation moulding kits	1,000ppm	EU REACH Regulation (No.1907/2006)
21	Perfluorooctane sulfonates (PFOS)	All	Intentionally added and 1,000ppm	Stockholm convention on Persistent Organic Pollutants EU Persistent Organic Pollutants (POPs) Regulation (No.2019/1021) Japan Chemical Substance Control Law
22	Fluorinated greenhouse gases (HFC, PFC, SF6)	All	Intentionally added	EU REGULATION No 517/2014 on fluorinated greenhouse gases
23	2-Benzotriazol-2-yl-4,6-di-tert-butylphenyl	All	Intentionally added	EU REACH Regulation (No.1907/2006) Japan Chemical Substance Control Law
24	Dimethyl Fumarate(Fumaric Acid Dimethyl Ester)(DMF)	All	0.1ppm	EU REACH Regulation (No.1907/2006)
25	Polycyclic Aromatic Hydrocarbons (PAH)	Rubber or plastic parts of articles that come into direct, prolonged or repetitive skin or oral cavity contact	1ppm	EU REACH Regulation (No.1907/2006)
26	N-Phenyl-benzenamine reaction products with styrene and 2,4,4-trimethylpentene (BNST)	All	Intentionally added	Canada Prohibition of Certain Toxic Substances. Regulations,2012 (SOR/212-282)
27	Di(2-ethylhexyl) phthalate (DEHP)	All	1,000ppm	EU RoHS Directive(2011/65/EU) EU REACH Regulation (No.1907/2006)
28	Butylbenzyl phthalate (BBP)	All	1,000ppm	EU RoHS Directive(2011/65/EU) EU REACH Regulation (No.1907/2006)
29	Dibutyl phthalate (DBP)	All	1,000ppm	EU RoHS Directive(2011/65/EU) EU REACH Regulation (No.1907/2006)

(1) Prohibited substances

No.	Substance name	Scope	Control Value	Reference laws and regulations
30	Diisobutyl phthalate (DIBP)	All	1,000ppm	EU RoHS Directive(2011/65/EU) EU REACH Regulation (No.1907/2006)
31	Perfluorooctanoic acid (PFOA) and its salts	All	25ppb of PFOA including its salts in article or mixture	Stockholm convention on Persistent Organic Pollutants Japan Chemical Substance Control Law EU REACH Regulation (No.1907/2006)
32	PFOA-related substances	All	1,000ppb of one or a combination of PFOA related substances, in article or mixture	USA PFOA Stewardship Program
33	Restricted substances regulated by ANNEX XVII of REACH Regulation (EC) No 1907/2006*1	Conforms to the regulations	Conforms to the regulations	EU REACH Regulation (No.1907/2006)
34	Substances subject to authorisation of Annex XIV of REACH Regulation (EC) No 1907/2006*1	All	Intentionally added	EU REACH Regulation (No.1907/2006)
35	2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP)*3	All	Intentionally added	Japan Chemical Substance Control Law TSCA PBT Regulation (USA)
36	Phenol, isopropylated phosphate (3:1) (PIP (3:1))*3	All	Intentionally added	TSCA PBT Regulation (USA)
37	Pentachlorothiophenol (PCTP)*3	All	10,000ppm	TSCA PBT Regulation (USA)
38	Hexachlorobutadiene (HBCD)*3	All	Intentionally added	Stockholm convention on Persistent Organic Pollutants Japan Chemical Substance Control Law TSCA PBT Regulation (USA)

(2) Controlled substances

No.	Substance name	Reference laws and regulations
1	Beryllium oxide	DIGITALEUROPE/CECED/AeA/EERA Guidance
2	Nickel	EU REACH Regulation (No.1907/2006)
3	Brominated Flame Retardants (other than PBBs, PBDEs or HBCD)	JS709 IPC-4101 IEC 61249-2-21
4	Polyvinyl chloride(PVC)	EU REACH Regulation (No.1907/2006)
5	Chlorine-based fire retardant	JS709 IPC-4101 IEC 61249-2-21
6	Bis(n-octyl) phthalate (DNOP)	Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) Case Law
7	Diisononyl phthalate (DINP)	Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) Case Law
8	Diisodecyl phthalate (DIDP)	Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) Case Law
9	Perchlorate	Best Management Practices for Perchlorate Materials
10	EU REACH Regulation (No.1907/2006) SVHCs, listed in Candidate list for authorization*1*2	EU REACH Regulation (No.1907/2006)

*1 Complies with the latest information published by the EU REACH Regulation and European Chemical Agency (ECHA).

*2 If any of the SVHC listed in the "Candidate List of Substances of Very High Concern for Authorisation" published by the European Chemicals Agency (ECHA) is found to be contained at a level of "0.1 wt%" or more, please inform to Mitutoyo Corporation.

*3 Restrictions on five persistent, bioaccumulative and toxic (PBT) chemicals, mixtures containing such chemicals, and products/articles under Section 6(h) of the U.S. Toxic Substances Control Act (TSCA). Phase-out prohibited uses and exempted uses are excluded.

Note Laws and regulations in this list is as of May 2021. For details please refer to the latest version of the respective laws and regulations, as they are subject to change.

2. Restrictions on the use of prohibited substances

(1) Cadmium/Cadmium compounds

Application	
Prohibited application	<p>Packaging components and materials (See Table 3) Batteries (See Table 4) Other applications except those specified in Exemption e.g.</p> <ul style="list-style-type: none"> - Stabilizers, pigments, dyes contained in plastic materials (Insulation of electrical wire, cord,cable. Resins, labells etc.) - Paints and inks - Solders, whose cadmium concentration is more than 20ppm - Surface treatment (electro plating, electroless plating etc.), coating - Fluorescent lamps (small- sized, straight- tube) - Electrical contact points such as DC motors, switches and relays etc. - Fuses (Fuse elements of thermal fuses) - Glass. Pigments and dyes used for glass - Optical glass - Parts, composed of zinc- containing metal (e.g. brass, hot dip galvanizing, etc.) whose cadmium concentration is more than 100 ppm - Heat stabilizers - Bearing alloys <p style="text-align: right;">etc.</p>
Exemptions	Applications specified in exempt application list (See Table 5)

(2) Hexavalant chromium compounds

Application	
Prohibited application	<p>Packaging components and materials (See Table 3) Other applications except those specified in Exemption e.g.</p> <ul style="list-style-type: none"> - Constituents of parts or materials(e.g. inks, paints, additives) - Residues in the surfaces of screws, steel sheets, etc. that are processed with plating or conversion coating - Pigment - Catalyst <p style="text-align: right;">etc.</p>
Exempt application	Applications specified in exempt application list (See Table 5)

(3) Lead/Lead compounds

Application	
Prohibited application	<p>Packaging components and materials (See Table 3) Cables and cords with thermoset or thermoplastic coatings Batteries (See Table4) Other applications except those specified in Exemption e.g.</p> <ul style="list-style-type: none"> - Paints, pigments, dyes, inks - Stabilizers in plastic or rubber materials. - Solders - Platings(including electroless plating films such as electroless nickel plating and electroless gold plating) - Optical glass, filter glass - External electrodes of parts - Resin additives - Metal alloy - Lubricant - Ferroelectrics - Vulcanizing agent - Curing agent - Free- cutting steels and Free- machining alloy - Materials for battery <p style="text-align: right;">etc.</p>
Exempt application	Applications specified in exempt application list (See Table 5)

(4) Mercury/Mercury compounds

Applications	
Prohibited applications	<p>Packaging components and materials (See Table 3) Batteries (See Table 4) Other applications except those specified in Exemption e.g.</p> <ul style="list-style-type: none"> - Paints, pigments, dyes, inks - Harmonizer in plastics - Fluorescent bulb - Contact point material - Anti- corrosion - Antibacterial treatment - Switches <p style="text-align: right;">etc.</p>
Exempt applications	Applications specified in exempt application list(See Table5)

(5) Tributyltin oxide(TBTO)

Applications	
Prohibited applications	<p>All applications e.g.</p> <ul style="list-style-type: none"> - Paints, pigments and preservatives - Antifungal agent - Antistaining - Refrigerant - Foaming agent - Extinguishant - Solvent cleaner <p style="text-align: right;">etc.</p>

(6) Tri- substituted organostannic compounds

Applications	
Prohibited applications	All applications e.g. <ul style="list-style-type: none"> - Paints, pigments and stabilizers - Antioxidant - Antibacterial agent - Antifungal agent - Antistaining - Preservatives <p style="text-align: right;">etc.</p>

(7) Polybrominated biphenyls (PBB)

Applications	
Prohibited applications	All applications e.g. <ul style="list-style-type: none"> - Flame retardants contained in plastics <p style="text-align: right;">etc.</p>
Exempt applications	Applications specified in exempt application list(See Table5)

(8) Polybrominated diphenylethers (PBDE)

Applications	
Prohibited applications	All applications e.g. <ul style="list-style-type: none"> - Flame retardants contained in plastics <p style="text-align: right;">etc.</p>
Exempt applications	Applications specified in exempt application list(See Table5)

(9) Polychlorinated biphenyls (PCB)

Applications	
Prohibited applications	All applications e.g. <ul style="list-style-type: none"> - Flame retardants contained in plastics - Electrical insulation medium - Solvent - Electrolytic solution - Plasticizer - Dielectric sealant <p style="text-align: right;">etc.</p>

(10) Polychlorinated terphenyls (PCT)

Applications	
Prohibited applications	All applications e.g. <ul style="list-style-type: none"> - Flame retardants contained in plastics - Insulation oil - Lubricant oil - Electrical insulation medium - Solvent - Electrolytic solution - Plasticizer - Dielectric sealant <p style="text-align: right;">etc.</p>

(11) Polychlorinated naphthalenes(PCN) and other Polychlorinated naphthalenes(more than 2 chlorine atoms)

Applications	
Prohibited applications	<p>All applications</p> <p>e.g.</p> <ul style="list-style-type: none"> - Flame retardants contained in plastics - Lubricant oil - Paint - Stabilizer (electric characteristic, flame- resistant, water- resistant) - Insulator <p style="text-align: right;">etc.</p>

(12) Short- chain Chlorinated paraffins (C10- 13)

Applications	
Prohibited applications	<p>All applications</p> <p>e.g.</p> <ul style="list-style-type: none"> - Enclosures (Cabinets etc.) - Flame retardants for printed wiring board - Plasticizers <p style="text-align: right;">etc.</p>

(13) Asbestos

Applications	
Prohibited applications	<p>All applications</p> <p>e.g.</p> <ul style="list-style-type: none"> - Insulator - Filler - Pigment and Paint - Talc <p style="text-align: right;">etc.</p>

(14) Azocolourants and azodyes which form certain aromatic amines

Applications	
Prohibited applications	<p>The pigments used in parts or articles which may come into direct and prolonged contact with the human skin (e.g. ear phones, belts, straps etc.) , which release certain aromatic amines listed in Table6 by testing methods according to Annex XVII of RECAH Regulation</p> <p>e.g.</p> <ul style="list-style-type: none"> - Additives for textile, fabrics and leather materials - Pigment, dyes, colorants <p style="text-align: right;">etc.</p>

(15) Ozone depleting substances

Applications	
Prohibited applications	<p>All applications</p> <p>e.g.</p> <ul style="list-style-type: none"> - Components or materials processed with ODS during foaming or other processes. - Refrigerant - Extinguishant - Solvent cleaner <p style="text-align: right;">etc.</p>

(16) Formaldehyde

Applications	
Prohibited applications	- Wooden products made from fiberboard, particleboard
Exempt applications	- Other applications except those specified in prohibited applications

(17) Radioactive substances

Applications	
Prohibited applications	All applications

(18) Hexabromocyclododecane (HBCD)

Applications	
Prohibited applications	All applications e.g. - Flame retardants (Mainly used for foam polystyrene and some fibers) etc.

(19) Dibutyltin compounds (DBT)

Applications	
Prohibited applications	All applications e.g. - Stabilizer for PVC, Curing catalyst for silicone resin and urethane resin etc.

(20) Dioctyltin compounds (DOT)

Applications	
Prohibited applications	The following applications; (1) Textile articles intended to come into contact with the skin (2) Wall and floor coverings (3) Two- component room temperature vulcanisation moulding kits (RTV- 2 moulding kits) etc.

(21) Perfluorooctane sulfonates (PFOS)

Applications	
Prohibited applications	All applications except for the following exemptions
Exempt applications	- Photoresist for photolithography processes - Photographic coatings applied to films, papers, or printing plates

(22) Fluorinated greenhouse gases (HFC, PFC, SF6)

Applications	
Prohibited applications	All applications e.g. - Refrigerant, foaming agent, mounted substrate, cleaner etc.

(23) 2- Benzotriazol- 2- yl- 4,6- di- tert- butylphenyl

Applications	
Prohibited applications	All applications e.g. - Adhesive, Paint, Printing ink, Plastic, Ink ribbon, putty, Coating etc.

(24) Dimethyl Fumarate (Fumaric Acid Dimethyl Ester) (DMF)

Applications	
Prohibited applications	All applications e.g. - Moisture- proof agent, Antifungal agent etc.

(25) Polycyclic Aromatic Hydrocarbons (PAH)

Applications	
Prohibited applications	The following applications; Rubber or plastic components that come into direct as well as prolonged or short- term repetitive contact with the human skin or the oral cavity. etc.

(26) N- Phenyl- benzenamine reaction products with styrene and 2,4,4- trimethylpentene (BNST)

Applications	
Prohibited applications	All applications except for the following exemptions
Exempt applications	- Additives to rubber except tires

(27), (28), (29) and (30) Four phthalates

Applications	
Prohibited applications	All applications e.g. Plasticizer, Dye, Pigment, Paint, Ink, adhesive, lubricant etc.

(31) Perfluorooctanoic acid (PFOA) and its salts and (32) PFOA- related substances

Applications	
Prohibited applications	All applications; e.g. - Textiles, photographic coatings applied to films, paper or printing plates and other coated consumer products - Greases, textiles and other coated consumer products, and emulsifiers used for manufacturing the Fluoropolymers and fluoroelastomers etc.

(33) Substance, group of substances or mixtures restricted by Annex XVII of EU REACH Regulation

Applications	
Prohibited applications	All applications or conditions specified by Annex XVII of EU REACH Regulation

(34) Substances subject to authorization of AnnexXIV of EU REACH Regulation

Applications	
Prohibited applications	All applications

(35) 2,4,6- Tris(tert- butyl)phenol (2,4,6- TTBP)

Applications	
Prohibited applications	All applications

(36) Phenol, isopropylated phosphate (3:1) (PIP (3:1))

Applications	
Prohibited applications	All except the following excluded applications and progressively prohibited uses
Exempt applications	<ul style="list-style-type: none"> - Use in aviation hydraulic fluid in hydraulic systems and use in specialty hydraulic fluids for military applications - Use in lubricants and greases - Use in new and replacement parts for the aerospace and automotive industries - Use as an intermediate in the manufacture of cyanoacrylate glue - Use in specialized engine air filters for locomotive and marine applications - Plastic for recycling from products or articles containing PIP (3:1), where no new PIP (3:1) is added during the recycling process - Finished products or articles made of plastic recycled from products or articles containing PIP (3:1), where no new PIP (3:1) was added during the production of the products or articles made of recycled plastic.

(37) Pentachlorothiophenol (PCTP)

	Applications
Prohibited applications	All applications

(38) Hexachlorobutadiene (HCBd)

	Applications
Prohibited applications	All applications

3. Prohibited substances for packaging materials

Substances	Application
Heavy metals ▪ cadmium ▪ lead ▪ hexavalent chromium ▪ mercury	The concentration of lead, cadmium, mercury and hexavalent chromium in each packaging component, ink and paint shall not exceed 100 ppm.

4. Prohibited substances for batteries

Control level	Substances	Classification of batteries	Threshold level
Prohibition	Cadmium	1. All batteries except those indicated in following 2 and 3	20ppm Exemption The battery of the use of following 1 and 2 1) Emergency and warning system including emergency lamps 2) Medical equipment
		2. Manganese battery, Alkaline battery	10ppm
		3. Nickel hydride (Ni-MH) second (excluding Button battery)	10ppm
	Lead	1. Manganese battery	1,000ppm
		2. Alkaline battery	40ppm
		3. Nickel hydride (Ni-MH) (excluding Button battery)	4,000ppm
	Mercury	1. All batteries except those indicated in following 2-4	5ppm in homogenous material
		2. Manganese battery, Alkaline battery	1) Intentionally added 2) 1ppm in battery or 5ppm in homogenous material
		3. Nickel hydride (Ni-MH) (excluding Button battery)	1ppm in battery or 5ppm in homogenous material
		4. Mercury oxide cells, Mercury oxide button cells, Button-type air-zinc cell battery, Button-type silver oxide cell battery, All button batteries used in consumer products (excluding Alkaline button battery and Manganese button battery)	Intentionally added When the substance is contained as impurity, item 1 above shall apply

5-1. The exemptions of EU RoHS Directive(2011/65/EU)
(ANNEX III of EU RoHS)

No.	Exemption	Scope and dates of applicability
1	Mercury in single capped (compact) fluorescent lamps not exceeding (per burner):	
1(a)	For general lighting purposes < 30 W: 5mg 2.5 mg	2,5 mg shall be used per burner after 31, December 2012 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
1(b)	For general lighting purposes ≥ 30 W and < 50 W: 3.5 mg	Expires on 31 December 2011; 3,5 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
1(c)	For general lighting purposes ≥ 50 W and < 150 W: 5 mg	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
1(d)	For general lighting purposes ≥ 150 W: 15 mg	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
1(e)	For general lighting purposes with circular or square structural shape and tube diameter ≤ 17 mm : 7 mg	No limitation of use until 31 December 2011; 7 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
1(f)	For special purposes: 5 mg	Categories 1-7, 10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments; Expires on 21 July 2024
1(g)	For general lighting purposes < 30 W with a lifetime equal or above 20 000 h: 3,5 mg	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
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): 5 mg 4 mg	Expires on 31 December 2011; 4 mg may be used per lamp after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously

No.	Exemption	Scope and dates of applicability
2(a)(2)	Tri-band phosphor with normal lifetime and a tube diameter ≥ 9 mm and ≤ 17 mm (e.g. T5): 3 mg	Expires on 31 December 2011; 3 mg may be used per lamp after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
2(a)(3)	Tri-band phosphor with normal lifetime and a tube diameter > 17 mm and ≤ 28 mm (e.g. T8): 3.5 mg	Expires on 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
2(a)(4)	Tri-band phosphor with normal lifetime and a tube diameter > 28 mm (e.g. T12): 3.5 mg	Expires on 31 December 2012; 3,5 mg may be used per lamp after 31 December Categories 1-7 and 10; Remain in force until the decision on extension application continuously
2(a)(5)	Tri-band phosphor with long lifetime ($> 25\,000$ h): 5 mg	Expires on 31 December 2011; 5 mg may be used per lamp after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
2(b)	Mercury in other fluorescent lamps not exceeding (per lamp):	
2(b)(1)	Linear halophosphate lamps with tube > 28 mm (e.g. T10 and T12): 10 mg	Expires on 13 April 2012
2(b)(2)	Non-linear halophosphate lamps (all diameters): 15 mg	Expires on 13 April 2016
2(b)(3)	Non-linear tri-band phosphor lamps with tube diameter > 17 mm (e.g. T9) : 15 mg	No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011 Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
2(b)(4)	Lamps for other general lighting and special purposes (e.g. induction lamps) : 15 mg	<p>No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011 Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024</p>
3	Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL) for special purposes not exceeding (per lamp):	
3(a)	Short length (≤ 500 mm) : 3.5 mg	<p>No limitation of use until 31 December 2011; 3,5 mg may be used per lamp after 31 December 2011 Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024</p>
3(b)	Medium length (> 500 mm and $\leq 1\ 500$ mm) : 5 mg	<p>No limitation of use until 31 December 2011; 5 mg may be used per lamp after 31 December 2011 Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024</p>

No.	Exemption	Scope and dates of applicability
3(c)	Long length (> 1 500 mm): 13mg	<p>No limitation of use until 31 December 2011; 13 mg may be used per lamp after 31 December 2011 Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024</p>
4(a)	Mercury in other low pressure discharge lamps (per lamp): 15 mg	<p>No limitation of use until 31 December 2011; 15 mg may be used per lamp after 31 December 2011 Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024</p>
4(b)	Mercury in High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner) in lamps with improved colour rendering index Ra > 60:	
4(b)-I	P ≤ 155 W: 30 mg	<p>No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously</p>
4(b)-II	155 W < P ≤ 405 W : 40 mg	<p>No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously</p>
4(b)-III	P > 405 W : 40 mg	<p>No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously</p>
4(c)	Mercury in other High Pressure Sodium (vapour) lamps for general lighting purposes not exceeding (per burner):	

No.	Exemption	Scope and dates of applicability
4(c)-I	$P \leq 155 \text{ W} : 25 \text{ mg}$	No limitation of use until 31 December 2011; 25 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
4(c)-II	$155 \text{ W} < P \leq 405 \text{ W} : 30 \text{ mg}$	No limitation of use until 31 December 2011; 30 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
4(c)-III	$P > 405 \text{ W} : 40 \text{ mg}$	No limitation of use until 31 December 2011; 40 mg may be used per burner after 31 December 2011 Categories 1-7 and 10; Remain in force until the decision on extension application continuously
4(d)	Mercury in High Pressure Mercury (vapour) lamps (HPMV)	
4(e)	Mercury in metal halide lamps (MH)	Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
4(f)	Mercury in other discharge lamps for special purposes not specifically mentioned in this Annex	Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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

No.	Exemption	Scope and dates of applicability
5(a)	Lead in glass of cathode ray tubes	Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
5(b)	Lead in glass of fluorescent tubes not exceeding 0,2 % by weight	Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
6(a)	Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0,35 % lead by weight	Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
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	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
6(b)	Lead as an alloying element in aluminium containing up to 0,4 % lead by weight	Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
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	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
6(b)-II	Lead as an alloying element in aluminium for machining purposes with a lead content up to 0,4 % by weight	Categories 1-7 and 10; Remain in force until the decision on extension application continuously

No.	Exemption	Scope and dates of applicability
6(c)	Copper alloy containing up to 4 % lead by weight	Categories 1- 7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
7(a)	Lead in high melting temperature type solders (i.e. lead-based alloys containing 85 % by weight or more lead)	Categories 1-7 and 10 (Except applications covered by point 24) and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
7(b)	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signalling, transmission, and network management for telecommunications	Cat. 8 and 9 except for the following: Expires on 21 July 2021 In vitro diagnostic medical devices: Expires on 21 July 2023 Industrial monitoring and control instruments: Expires on 21 July 2024
7(c)-I	Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound	Categories 1-7 and 10 (Except applications covered by point 34) and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
7(c)-II	Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher	Does not apply to applications covered by point 7(c)-I and 7(c)-IV of this Annex. Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
7(c)-III	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC	Expires on 1 January 2013
7(c)-IV	Lead in PZT based dielectric ceramic materials for capacitors which are part of integrated circuits or discrete semiconductors	Expires on: — 21 July 2021 for categories 1-7 and 10 — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments — 21 July 2023 for category 8 in vitro diagnostic medical devices — 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11
8(a)	Cadmium and its compounds in one shot pellet type thermal cut-offs	Expires on 1 January 2012 and after that date may be used in spare parts for EEE placed on the market before 1 January 2012
8(b)	Cadmium and its compounds in electrical contacts	Categories 8 and 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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 \geq 200 Hz.	Categories 1-7 and 10; Remain in force until the decision on extension application continuously Apply from March 1, 2020
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators up to 0,75 % by weight in the cooling solution	
9(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	Applies to categories 1-7 and 10 and expires on 5 March 2021. (the exclusion abolition)

No.	Exemption	Scope and dates of applicability
9(a)-II	Up to 0,75 % hexavalent chromium by weight, used as an anticorrosion agent in the cooling solution of carbon steel cooling systems of absorption refrigerators: — designed to operate fully or partly with electrical heater, having an average utilised power input > 75 W at constant running conditions, — designed to fully operate with non-electrical heater.	Applies to categories 1-7 and 10 and expires on 21 July 2021.
9(b)	Lead in bearing shells and bushes for refrigerant-containing compressors for heating, ventilation, air conditioning and refrigeration (HVACR) applications	Applies to categories 8, 9 and 11; expires on: — 21 July 2023 for category 8 in vitro diagnostic medical devices, — 21 July 2024 for category 9 industrial monitoring and control instruments and for category 11, — 21 July 2021 for other subcategories of categories 8 and 9.
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	Applies to category 1; expires on 21 July 2019.
11(a)	Lead used in C press compliant pin connector systems	May be used in spare parts for EEE placed on the market before 24 September 2010
11(b)	Lead used in other than C press compliant pin connector systems	Expires on 1 January 2013 and after that date may be used in spare parts for EEE placed on the market before 1 January 2013
12	Lead as a coating material for the thermal conduction module C-ring	May be used in spare parts for EEE placed on the market before 24 September 2010
13(a)	Lead in white glasses used for optical applications	Categories 1-7, 10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
13(b)	Cadmium and lead in filter glasses and glasses used for reflectance standards	Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
13(b)-(I)	Lead in ion coloured optical filter glass types	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
13(b)-(II)	Cadmium in striking optical filter glass types; excluding applications falling under point 39 of this Annex	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
13(b)-(III)	Cadmium and lead in glazes used for reflectance standards	Categories 1-7 and 10; Remain in force until the decision on extension application continuously
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
15	Lead in solders to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages	Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
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.	Categories 1-7 and 10; Remain in force until the decision on extension application continuously Apply from March 1, 2020
16	Lead in linear incandescent lamps with silicate coated tubes	
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications	Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
18(a)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as speciality lamps for diazoprinting reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS ((Sr,Ba) ₂ MgSi ₂ O ₇ :Pb)	Expired on 1 January 2011
18(b)	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP (BaSi ₂ O ₅ :Pb)	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
18(b)-I	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps containing phosphors such as BSP (BaSi ₂ O ₅ :Pb) when used in medical phototherapy equipment	Categories 5 and 8 (except applications covered by entry 34 of Annex IV); Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; 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)	Expires on 1 June 2011
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs)	Expires on 1 June 2011
21	Lead and cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Applies to categories 8, 9 and 11 and expires on: - 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; - 21 July 2023 for category 8 in vitro diagnostic medical devices; - 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
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	Applies to categories 1 to 7 and 10 except applications covered by entry 21(b) or entry 39 and expires on 21 July 2021.
21(b)	Cadmium in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	Applies to categories 1 to 7 and 10 except applications covered by entry 21(a) or 39 and expires on 21 July 2021.
21(c)	Lead in printing inks for the application of enamels on glasses, such as borosilicate and soda lime glasses	expires on 21 July 2021 for categories 1 to 7 and 10 Apply from March 20, 2020

No.	Exemption	Scope and dates of applicability
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0,65 mm and less	May be used in spare parts for EEE placed on the market before 24 September 2010
24	Lead in solders for the soldering to machined through hole discoidal and planar array ceramic multilayer capacitors	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
25	Lead oxide in surface conduction electron emitter displays (SED) used in structural elements, notably in the seal frit and frit ring	Categories 8 and 9 except for the following; Expires on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
26	Lead oxide in the glass envelope of black light blue lamps	Expires on 1 June 2011
27	Lead alloys as solder for transducers used in high-powered (designated to operate for several hours at acoustic power levels of 125 dB SPL and above) loudspeakers	Expired on 24 September 2010
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC (1)	Categories 1- 7,10; Remain in force until the decision on extension application continuously Categories 8 and 9 except for the following; Expires on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more	Categories 8 and 9 except for the following; Expires on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
31	Lead in soldering materials in mercury free flat fluorescent lamps (which, e.g. are used for liquid crystal displays, design or industrial lighting)	Categories 8 and 9 except for the following; Expires on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers	Categories 8 and 9 except for the following; Expires on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
34	Lead in cermet-based trimmer potentiometer elements	Categories 1-7,10 and Categories 8, 9 except for the following; Remain in force until the decision on extension application continuously Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024
36	Mercury used as a cathode sputtering inhibitor in DC plasma displays with a content up to 30 mg per display	
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body	Expires on: – 21 July 2021 for categories 1-7 and 10; – 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; – 21 July 2023 for category 8 in vitro diagnostic medical devices; – 21 July 2024 for category 9 industrial monitoring and control instruments, and for category 11.
38	Cadmium and cadmium oxide in thick film pastes used on aluminium bonded beryllium oxide	Categories 8 and 9 except for the following; Expires on 21 July 2021 Category 8 in vitro diagnostic medical devices; Expires on 21 July 2023 Category 9 industrial monitoring and control instruments and Category 11; Expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
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)	Remain in force until the decision on extension application continuously
40	Cadmium in photoresistors for analogue optocouplers applied in professional audio equipment	Expires on 31 December 2013
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)	Applies to all categories and expires on: — 31 March 2022 for categories 1 to 7, 10 and 11; — 21 July 2021 for categories 8 and 9 other than in vitro diagnostic medical devices and industrial monitoring and control instruments; — 21 July 2023 for category 8 in vitro diagnostic medical devices; — 21 July 2024 for category 9 industrial monitoring and control instruments.
42	Lead in bearings and bushes of diesel or gaseous fuel powered internal combustion engines applied in non-road professional use equipment: - with engine total displacement > 15 litres; 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.	Applies to category 11, excluding applications covered by entry 6(c) of this Annex. Expires on 21 July 2024.
43	Bis (2-ethylhexyl) phthalate in rubber components in engine systems, designed for use in equipment that is not intended solely for consumer use and provided that no plasticised material comes into contact with human mucous membranes or into prolonged contact with human skin and the concentration value of bis(2-ethylhexyl) phthalate does not exceed: (a) 30% by weight of the rubber for (i) gasket coatings; (ii) solid-rubber gaskets; or (iii) rubber components included in assemblies of at least three components using electrical, 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.	Applies to category 11 and expires on 21 July 2024

No.	Exemption	Scope and dates of applicability
44	Lead in solder of sensors, actuators, and engine control units (ECUs) 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	Applies to category 11 and expires on 21 July 2024

Disclaimers

Each exemptions of RoHS II placed in this list does not guarantee contents in Mitutoyo Corporation.
About the latest information, please refer to the law original.

5-2. The exemptions of EU RoHS Directive(2011/65/EU) specific to medical devices and monitoring and control instruments (ANNEX IV of EU RoHS)

No.	Exemption	Scope and dates of applicability
Equipment utilising or detecting ionising radiation		
1	Lead, cadmium and mercury in detectors for ionising radiation.	
2	Lead bearings in X-ray tubes.	
3	Lead in electromagnetic radiation amplification devices: micro-channel plate and capillary plate.	
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.	
5	Lead in shielding for ionising radiation.	
6	Lead in X-ray test objects.	
7	Lead stearate X-ray diffraction crystals.	
8	Radioactive cadmium isotope source for portable X-ray fluorescence spectrometers.	
Sensors, detectors and electrodes		
1a.	Lead and cadmium in ion selective electrodes including glass of pH electrodes.	
1b.	Lead anodes in electrochemical oxygen sensors.	
1c.	Lead, cadmium and mercury in infra-red light detectors.	
1d.	Mercury in reference electrodes: low chloride mercury chloride, mercury sulphate and mercury oxide.	
Others		
9	Cadmium in helium-cadmium lasers.	
10	Lead and cadmium in atomic absorption spectroscopy lamps.	
11	Lead in alloys as a superconductor and thermal conductor in MRI.	
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.	30 June 2021
13	Lead in counterweights.	
14	Lead in single crystal piezoelectric materials for ultrasonic	
15	Lead in solders for bonding to ultrasonic transducers.	
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.	
17	Lead in solders in portable emergency defibrillators.	
18	Lead in solders of high performance infrared imaging modules to detect in the range 8-14 μm .	
19	Lead in Liquid crystal on silicon (LCoS) displays.	
20	Cadmium in X-ray measurement filters.	
24	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.	Until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.
22	Lead acetate marker for use in stereotactic head frames for use with CT and MRI and in positioning systems for gamma beam and particle therapy equipment.	30 June 2021
23	Lead as an alloying element for bearings and wear surfaces in medical equipment exposed to ionising radiation.	30 June 2021

No.	Exemption	Scope and dates of applicability
24	Lead enabling vacuum tight connections between aluminium and steel in X-ray image intensifiers. Expires on 31 December 2019.	31 December 2019
25	Lead in the surface coatings of pin connector systems requiring nonmagnetic connectors which are used durably at a temperature below – 20 °C under normal operating and storage conditions.	30 June 2021
26	‘26. Lead in the following applications that are used durably at a temperature below – 20 °C under normal operating and storage conditions: (a) solders on printed circuit boards; (b) termination coatings of electrical and electronic components and coatings of printed circuit boards; (c) solders for connecting wires and cables; (d) solders connecting transducers and sensors. Lead in solders of electrical connections to temperature measurement sensors in devices which are designed to be used periodically at temperatures below – 150 °C.	30 June 2021
27	Lead in — solders, — termination coatings of electrical and electronic components and printed circuit boards, — connections of electrical wires, shields and enclosed connectors, which are used in (a) magnetic fields within the sphere of 1 m radius around the isocentre of the magnet in medical magnetic resonance imaging equipment, including patient monitors designed to be used within this sphere, or (b) magnetic fields within 1 m distance from the external surfaces of cyclotron magnets, magnets for beam transport and beam direction control applied for particle therapy. Expires on 30 June 2020.	Remain in force until the decision on extension application continuously
28	Lead in solders for mounting cadmium telluride and cadmium-zinc telluride digital array detectors to printed circuit boards. Expires on 31 December 2017.	31 December 2017
29	Lead in alloys, as a superconductor or thermal conductor, used in cryo-cooler cold heads and/or in cryo-cooled cold probes and/or in cryo-cooled equipotential bonding systems, in medical devices (category 8) and/or in industrial monitoring and control instruments.	Remain in force until the decision on extension application continuously
30	Hexavalent chromium in alkali dispensers used to create photocathodes in X-ray image intensifiers until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.	Until 31 December 2019 and in spare parts for X-ray systems placed on the EU market before 1 January 2020.

No.	Exemption	Scope and dates of applicability
31a	<p>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.</p> <p>Expires on:</p> <p>(a) 21 July 2021 for the use in medical devices other than in vitro diagnostic medical devices;</p> <p>(b) 21 July 2023 for the use in in vitro diagnostic medical devices;</p> <p>(c) 21 July 2024 for the use in electron microscopes and their accessories.</p>	<p>(a) medical devices and monitoring and control instruments;</p> <p>Remain in force until the decision on extension application continuously</p> <p>(b) in-vitro diagnostic medical devices;</p> <p>Remain in force until the decision on extension application continuously</p> <p>(c) 21 July 2024 for industrial monitoring and control</p>
32	<p>Lead in solders on printed circuit boards of detectors and data acquisition units for Positron Emission Tomographs which are integrated into Magnetic Resonance Imaging equipment. Expires on 31 December 2019.</p>	31 December 2019
33	<p>Lead in solders on populated printed circuit boards used in Directive 93/42/EEC class IIa and IIb mobile medical devices other than portable emergency defibrillators. Expires on 30 June 2016 for class IIa and on 31 December 2020 for class IIb.</p>	Expires on 30 June 2016 for class IIa and on 31 December 2020 for class IIb.
34	<p>Lead as an activator in the fluorescent powder of discharge lamps when used for extracorporeal photopheresis lamps containing BSP (BaSi 2 O 5 :Pb) phosphors. Expires on 22 July 2021.</p>	22 July 2021
35	<p>Mercury in cold cathode fluorescent lamps for back-lighting liquid crystal displays, not exceeding 5 mg per lamp, used in industrial monitoring and control instruments placed on the market before 22 July 2017</p>	21 July 2024
36	<p>Lead used in other than C press compliant pin connector systems for industrial monitoring and control instruments.</p> <p>Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.</p>	Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.
37	<p>Lead in platinized platinum electrodes used for conductivity measurements where at least one of the following conditions applies:</p> <p>(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;</p> <p>(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:</p> <p>(i) solutions with an acidity < pH 1;</p> <p>(ii) solutions with an alkalinity > pH 13;</p> <p>(iii) corrosive solutions containing halogen gas;</p> <p>(c) measurements of conductivities above 100 mS/m that must be performed with portable instruments.</p>	31 December 2025

No.	Exemption	Scope and dates of applicability
38	Lead in solder in one interface of large area stacked die elements with more than 500 interconnects per interface which are used in X-ray detectors of computed tomography and X-ray systems. Expires on 31 December 2019. May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.	Expires on 31 December 2019. May be used after that date in spare parts for CT and X-ray systems placed on the market before 1 January 2020.
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 $1,3 \times 10^3$. (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 $4,0 \times 10^7$.	The exemption expires on the following dates: (a) medical devices and monitoring and control instruments; Remain in force until the decision on extension application continuously (b) 21 July 2023 for in-vitro diagnostic medical devices; (c) 21 July 2024 for industrial monitoring and control instruments.
40	Lead in dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC for industrial monitoring and control instruments.	Expires on 31 December 2020. May be used after that date in spare parts for industrial monitoring and control instruments placed on the market before 1 January 2021.
41	Lead as a thermal stabiliser in polyvinyl chloride (PVC) used as base material in amperometric, potentiometric and conductometric electrochemical sensors which are used in in-vitro diagnostic medical devices for the analysis of blood and other body fluids and body gases. Expires on 31 December 2018.	31 December 2018
42	Mercury in electric rotating connectors used in intravascular ultrasound imaging systems capable of high operating frequency (> 50 MHz) modes of operation. Expires on 30 June 2019.	30 June 2019
43	Cadmium anodes in Hersch cells for oxygen sensors used in industrial monitoring and control instruments, where sensitivity below 10 ppm is required.	15 July 2023

No.	Exemption	Scope and dates of applicability
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. Applies to category 9.	31 March 2027.

Disclaimers

Each exemptions of RoHS II placed in this list does not guarantee contents in Mitutoyo Corporation.

About the latest information, please refer to the law original.

6. Detailed Substances List (These lists are not comprehensive)

(1) Prohibited substances

No.	Substance	CAS No.	
1	Cadmium/Cadmium Compounds	Cadmium	7440-43-9
		Cadmium oxide	1306-19-0
		Cadmium sulfide	1306-23-6
		Cadmium chloride	10108-64-2
		Cadmium sulfate	10124-36-4
		Other cadmium compounds	—
2	Chromium VI compounds	Chromium (VI) oxide	1333-82-0
		Barium chromate	10294-40-3
		Calcium chromate	13765-19-0
		Chromium (VI) oxide	1333-82-0
		Lead (II) chromate	7758-97-6
		Sodium chromate	7775-11-3
		Sodium dichromate	10588-01-9
		Strontium chromate	7789-06-2
		Potassium dichromate	7778-50-9
		Potassium chromate	7789-00-6
		Zinc chromate	13530-65-9
		Other chromium VI compounds	—
		3	Lead/Lead compounds
Lead (II) sulfate	7446-14-2		
Lead (II) carbonate	598-63-0		
Lead (II) hydro carbonate	1319-46-6		
Lead acetate	301-04-2		
Lead (II) acetate, trihydrate	6080-56-4		
Lead phosphate	7446-27-7		
Lead selenide	12069-00-0		
Lead (IV) oxide	1309-60-0		
Lead (II,IV) oxide	1314-41-6		
Lead (II) sulfide	1314-87-0		
Lead (II) oxide	1317-36-8		
Lead hydrocarbonate	1319-46-6		
Lead hydroxidcarbonate	1344-36-1		
Lead (II) phosphate	7446-27-7		
Lead (II) chromate	7758-97-6		
Lead (II) titanate	12060-00-3		
Lead sulfate, sulphuric acid, lead salt	15739-80-7		
Lead sulphate, tribasic	12202-17-4		
Lead stearate	1072-35-1		
Other lead compounds	—		
4	Mercury/Mercury compounds	Mercury	7439-97-6
		Mercuric chloride	33631-63-9
		Mercury (II) chloride	7487-94-7
		Mercuric sulfate	7783-35-9
		Mercuric nitrate	10045-94-0
		Mercuric (II) oxide	21908-53-2
		Mercuric sulfide	1344-48-5
		Other mercury compounds	—
5	Tributyl tin oxide(TBTO)	Tributyl tin oxide(TBTO)	56-35-9
6	Tri-substituted organostannic compounds	Triphenyltin-N, N-dimethyldithiocarbamate	1803-12-9
		Triphenyltinfluoride	379-52-2
		Triphenyltinacetate	900-95-8
		Triphenyltinchloride	639-58-7
		Triphenyltinhydroxide	76-87-9

Continued

No.	Substance	CAS No.
6	Tri-substituted organostannic compounds	Triphenyltin fattyacid((9-11)salt) 18380-71-7, 18380-72-8, 47672-31-1, 94850-90-5 Triphenyltinchloroacetate 7094-94-2 Tributyltinmethacrylate 2155-70-6 Bis(tributyltin)fumalate 6454-35-9 Tributyltinfluoride 30593 Bis(tributyltin)2,3-dibromosuccinate 31732-71-5 Tributyltinacetate 56-36-0 Tributyltinlaurate 3090-36-6 Bis(tributyltin)phthalate 4782-29-0 Copolymer of alkyl (c=8) acrylate, methyl methacrylate and tributyltin methacrylate 67772-01-4 Tributyltinsulfamate 6517-25-5 Bis(tributyltin)maleate 14275-57-1 Tributyltinchloride 1461-22-9, 7342-38-3 Tributyltin cyclopentane carbonate = mixture 85409-17-2 Tributyltin-1,2,3,4,4a,4b,5,6,10,10a-decahydro-7-isopropyl-1,4a-dimethyl-1-phenanthrenecarboxylatemix 26239-64-5
7	Polybrominated Biphenyls(PBBs)	Polybrominated Biphenyls 59536-65-1 Dibromobiphenyl 92-86-4 2-Bromobiphenyl 2052-07-5 3-Bromobiphenyl 2113-57-7 4-Bromobiphenyl 92-66-0 Tribromobiphenyl 59080-34-1 Tetrabromobiphenyl 40088-45-7 Pentabromobiphenyl 56307-79-0 Hexabromobiphenyl 59080-40-9 Hexabromo-1,1-biphenyl 36355-01-8 Firemaster FF-1 67774-32-7 Heptabromobiphenyl 35194-78-6 Octabromobiphenyl 61288-13-9 Nonabromobiphenyl 27753-52-2 Decabromobiphenyl 13654-09-6
8	Polybrominated Diphenyl Ethers (PBDEs)	Bromodiphenyl ether 101-55-3 Dibromodiphenyl ether 2050-47-7 Tribromodiphenyl ether 49690-94-0 Tetrabromodiphenyl ether 40088-47-9 Pentabromodiphenyl ether (note: Commercially available PeBDPO is a complex reaction mixture containing a variety of brominated diphenyloxid) 32534-81-9 (CAS number used for commercial grades of PeBDPO) Hexabromodiphenyl ether 36483-60-0 Heptabromodiphenyl ether 68928-80-3 Octabromodiphenyl ether 32536-52-0 Nonabromodiphenyl ether 63936-56-1 Decabromodiphenyl ether 1163-19-5
9	Polychlorinated Biphenyls (PCBs)	Polychlorinated Biphenyls (all isomers and congeners) 1336-36-3 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

No.	Substance		CAS No.	
10	Polychlorinated Terphenyls (PCTs)	Polychlorinated Terphenyls(all isomers and congeners)	61788-33-8	
11	Polychlorinated Naphthalenes(limited to those containing two or more chlorine	Polychlorinated Naphthalenes(limited to those containing three or more chlorine atoms)	70776-03-3	
		Other polychlorinated Naphthalenes	—	
12	Short Chain Chlorinated Paraffins (C10-C13)	Alkanes, C10-13, chloro	85535-84-8	
13	Asbestos	Asbestos	1332-21-4	
		Actinolite	77536-66-4	
		Amosite (Grunerite)	12172-73-5	
		Anthophyllite	77536-67-5	
		Chrysotile	12001-29-5	
		Crocidolite	12001-28-4	
		Tremolite	77536-68-6	
14	Azocolourants and azodyes which form certain aromatic amines (22 Aromatic amines)	Biphenyl-4-ylamine	92-67-1	
		Benzidine	92-87-5	
		4-chloro-o-toluidine	95-69-2	
		2-naphthylamine	91-59-8	
		o-aminoazotoluene	97-56-3	
		5-nitro-o-toluidine	99-55-8	
		4-chloroaniline	106-47-8	
		4-methoxy-m-phenylenediamine	615-05-4	
		4,4'-methylenedianiline	101-77-9	
		3,3'-dichlorobenzidine	91-94-1	
		3,3'-dimethoxybenzidine	119-90-4	
		3,3'-dimethylbenzidine	119-93-7	
		4,4'-methylenedi-o-toluidine	838-88-0	
		6-methoxy-m-toluidine	120-71-8	
		4,4'-methylene-bis(2-chloroaniline)	101-14-4	
		4,4'-oxydianiline	101-80-4	
		4,4'-thiodianiline	139-65-1	
		o-toluidine	95-53-4	
		4-methyl-m-phenylenediamine	95-80-7	
		2,4,5-trimethylaniline	137-17-7	
o-anisidine	90-04-0			
4-amino azobenzene	60-09-3			
15	Ozone Depleting Substances	Trichlorofluoromethane (CFC-11)	75-69-4	
		Dichlorodifluoromethane (CFC-12)	75-71-8	
		Chlorotrifluoromethane (CFC-13)	75-72-9	
		Pentachlorofluoroethane (CFC-111)	354-56-3	
		Tetrachlorodifluoroethane (CFC-112)	76-12-0	
		1,1,1-Trichloro-2,2,2 trifluoroethane (CFC-113a)	354-58-5	
		Trichlorotrifluoroethane (CFC-113)	76-13-1	
		1,1,2-Trichloro-1,2,2 trifluoroethane (CFC-113)		
		Dichlorotetrafluoroethane (CFC-114)	76-14-2	
		Monochloropentafluoroethane (CFC-115)	76-15-3	
		Heptachlorofluoropropane (CFC-211)	422-78-6 , 135401-87-5	
		Hexachlorodifluoropropane (CFC-212)	3182-26-1	
		Pentachlorotrifluoropropane (CFC-213)	2354-06-5 , 134237-31-3	
		Tetrachlorotetrafluoropropane (CFC-214)	29255-31-0	
		1,2,2,3-Tetrachloro-1,1,3,3-tetrafluoropropane (CFC-	2268-46-4	
		Trichloropentafluoropropane (CFC-215)	1599-41-3	
		1,1,1-Trichloropentafluoropropane (CFC-215cb)	4259-43-2	
		Continued	1,2,3-Trichloropentafluoropropane (CFC-215ba)	76-17-5

No.	Substance	CAS No.	
15	Ozone Depleting Substances	Dichlorohexafluoropropane (CFC-216)	661-97-2
		Chloroheptafluoropropane (CFC-217)	422-86-6
		Bromochlorodifluoromethane (Halon-1211)	353-59-3
		Bromotrifluoromethane (Halon-1301)	75-63-8
		Dibromotetrafluoroethane (Halon-2402)	124-73-2
		Tetrachloromethane (carbon tetrachloride)	56-23-5
		1,1,1-Trichloroethane (methylchloroform) and its isomers, except 1,1,2-Trichloroethane	71-55-6
		Bromomethane (methyl bromide)	74-83-9
		Dibromofluoromethane (HBFC-21 B2)	1868-53-7
		Bromodifluoromethane (HBFC-22 B1)	1511-62-2
		Bromofluoromethane (HBFC-31 B1)	373-52-4
		Tetrabromofluoroethane (HBFC-121 B4)	306-80-9
		Tribromodifluoroethane (HBFC-122 B3)	—
		Dibromotrifluoroethane (HBFC-123 B2)	354-04-1
		Bromotetrafluoroethane (HBFC-124 B1)	124-72-1
		Tribromofluoroethane (HBFC-131 B3)	—
		Dibromodifluoroethane (HBFC-132 B2)	75-82-1
		Bromotrifluoroethane (HBFC-133 B1)	421-06-7
		Dibromofluoroethane (HBFC-141 B2)	358-97-4
		Bromodifluoroethane (HBFC-142 B1)	420-47-3
		Bromofluoroethane (HBFC-151 B1)	762-49-2
		Hexabromofluoropropane (HBFC-221 B6)	—
		Pentabromodifluoropropane (HBFC-222 B5)	—
		Tetrabromotrifluoropropane (HBFC-223 B4)	—
		Tribromotetrafluoropropane (HBFC-224 B3)	—
		Dibromopentafluoropropane (HBFC-225 B2)	431-78-7
		Bromohexafluoropropane (HBFC-226 B1)	2252-78-0
		Pentabromofluoropropane (HBFC-231 B5)	—
		Tetrabromodifluoropropane (HBFC-232 B4)	—
		Tribromotrifluoropropane (HBFC-233 B3)	—
		Dibromotetrafluoropropane (HBFC-234 B2)	—
		Bromopentafluoropropane (HBFC-235 B1)	460-88-8
		Tetrabromofluoropropane (HBFC-241 B4)	—
		Tribromodifluoropropane (HBFC-242 B3)	70192-80-2
		Dibromotrifluoropropane (HBFC-243 B2)	431-21-0
		Bromotetrafluoropropane (HBFC-244 B1)	679-84-5
		Tribromofluoropropane (HBFC-251 B3)	75372-14-4
		Dibromodifluoropropane (HBFC-252 B2)	460-25-3
		Bromotrifluoropropane (HBFC-253 B1)	421-46-5
		Dibromofluoropropane (HBFC-261 B2)	51584-26-0
		Bromodifluoropropane (HBFC-262 B1)	—
		Bromofluoropropane (HBFC-271 B1)	1871-72-3
		Bromochloromethane (Halon-1011)	74-97-5
		Dichlorofluoromethane (HCFC-21)	75-43-4
		Chlorodifluoromethane (HCFC-22)	75-45-6
		Chlorofluoromethane (HCFC-31)	593-70-4
		Tetrachlorofluoroethane (HCFC-121)	134237-32-4
		1,1,1,2-Tetrachloro-2-fluoroethane (HCFC-121a)	354-11-0
		1,1,2,2-Tetrachloro-1-fluoroethane (HCFC-121)	354-14-3
		Trichlorodifluoroethane (HCFC-122)	41834-16-6
1,2,2-Trichloro-1,1-difluoroethane (HCFC-122)	354-21-2		
Continued	Dichlorotrifluoroethane(HCFC-123)	34077-87-7	

No.	Substance	CAS No.	
15	Ozone Depleting Substances	Dichloro-1,1,2-trifluoroethane	90454-18-5
		1,1-Dichloro-2,2,2-trifluoroethane (HCFC-123)	306-83-2
		1,2-Dichloro-1,1,2-trifluoroethane (HCFC-123a)	354-23-4
		1,1-Dichloro-1,2,2-trifluoroethane (HCFC-123b)	812-04-4
		Chlorotetrafluoroethane (HCFC-124)	63938-10-3
		2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	2837-89-0
		1-chloro-1,1,2,2-tetrafluoroethane (HCFC-124a)	354-25-6
		Trichlorofluoroethane (HCFC-131)	27154-33-2 ; (134237-34-6)
		1,1,2-Trichloro-2-fluoroethane (HCFC-131)	359-28-4
		1,1,2-Trichloro-1-fluoroethane (HCFC131a)	811-95-0
		1-Chloro-1-fluoroethane (HCFC-151a)	1615-75-4
		Dichlorodifluoroethane (HCFC-132)	25915-78-0
		1,2-Dichloro-1,1-difluoroethane (HCFC-132b)	1649-08-7
		1,1-Dichloro-1,2-difluoroethane (HCFC-132c)	1842-05-3
		1,1-Dichloro-2,2-difluoroethane (HCFC-132a)	471-43-2
		1,2-Dichloro-1,2-difluoroethane (HCFC-132)	431-06-1
		Chlorotrifluoroethane (HCFC-133)	1330-45-6
		1-Chloro-1,2,2-trifluoroethane (HCFC-133)	1330-45-6
		2-Chloro-1,1,1-trifluoroethane (HCFC-133a)	75-88-7
		Dichlorofluoroethane(HCFC-141)	1717-00-6; (25167-88-8)
		1,1-Dichloro-1-fluoroethane (HCFC-141b)	1717-00-6
		1,2-Dichloro-1-fluoroethane (HCFC-141)	430-57-9
		Chlorodifluoroethane (HCFC-142)	25497-29-4
		1-Chloro-1,1-difluoroethane (HCFC-142b)	75-68-3
		1-Chloro-1,2-difluoroethane (HCFC-142a)	338-64-7
		Hexachlorofluoropropane (HCFC-221)	134237-35-7
		Pentachlorodifluoropropane (HCFC-222)	134237-36-8
		Tetrachlorotrifluoropropane (HCFC-223)	134237-37-9
		Trichlorotetrafluoropropane (HCFC-224)	134237-38-0
		Dichloropentafluoropropane (HCFC-225)	127564-92-5; (2713-09-9)
		2,2-Dichloro-1,1,1,3,3-pentafluoropropane(HCFC-225aa)	128903-21-9
		2,3-Dichloro-1,1,1,2,3-pentafluoropropane (HCFC-225ba)	422-48-0
		1,2-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225bb)	422-44-6
		3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)	422-56-0
		1,3-Dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)	507-55-1
		1,1-Dichloro-1,2,2,3,3-pentafluoropropane(HCFC-225cc)	13474-88-9
		1,2-Dichloro-1,1,3,3,3-pentafluoropropane (HCFC-225da)	431-86-7
		1,3-Dichloro-1,1,2,3,3-pentafluoropropane (HCFC-225ea)	136013-79-1
		1,1-Dichloro-1,2,3,3,3-pentafluoropropane(HCFC-225eb)	111512-56-2
		Chlorohexafluoropropane (HCFC-226)	134308-72-8
		Continued Pentachlorofluoropropane (HCFC-231)	134190-48-0

No.	Substance	CAS No.	
15	Ozone Depleting Substances	Tetrachlorodifluoropropane (HCFC-232)	134237-39-1
		Trichlorotrifluoropropane (HCFC-233)	134237-40-4
		1,1,1-Trichloro-3,3,3-trifluoropropane (HCFC-233fb)	7125-83-9
		Dichlorotetrafluoropropane (HCFC-234)	127564-83-4
		Chloropentafluoropropane (HCFC-235)	134237-41-5
		1-Chloro-1,1,3,3,3-pentafluoropropane (HCFC-235fa)	460-92-4
		Tetrachlorofluoropropane (HCFC-241)	134190-49-1
		Trichlorodifluoropropane (HCFC-242)	134237-42-6
		Dichlorotrifluoropropane (HCFC-243)	134237-43-7
		1,1-Dichloro-1,2,2-trifluoropropane (HCFC-243cc)	7125-99-7
		2,3-Dichloro-1,1,1-trifluoropropane (HCFC-243db)	338-75-0
		3,3-Dichloro-1,1,1-trifluoropropane (HCFC-243fa)	460-69-5
		Chlorotetrafluoropropane (HCFC-244)	134190-50-4
		3-Chloro-1,1,2,2-tetrafluoropropane (HCFC-244ca)	679-85-6
		Trichlorofluoropropane (HCFC-251)	134190-51-5
		1,1,3-Trichloro-1-fluoropropane (HCFC-251fb)	818-99-5
		Dichlorodifluoropropane (HCFC-252)	134190-52-6
		Chlorotrifluoropropane (HCFC-253)	134237-44-8
		3-Chloro-1,1,1-trifluoropropane (HCFC-253fb)	460-35-5
		Dichlorofluoropropane (HCFC-261)	134237-45-9
		1,1-Dichloro-1-fluoropropane (HCFC-261fc)	7799-56-6
		Chlorodifluoropropane (HCFC-262)	134190-53-7
		2-Chloro-1,3-difluoropropane (HCFC-262da)	102738-79-4
		Chlorofluoropropane (HCFC-271)	134190-54-8
2-Chloro-2-fluoropropane (HCFC-271ba)	420-44-0		
17	Radioactive Substances	Uranium-238	7440-61-1
		Radon	10043-92-2
		Americium-241	14596-10-2
		Thorium-232	7440-29-1
		Cesium(only Radioactive Isotope)	7440-46-2 (Cs-137 010045-97-3)
		Strontium(only radioactive isotope)	(Element 7440-24-6)
		Other radioactive substances	—
		18	Hexabromocyclododecane (HBCD)
19	Dibutyltin compounds (DBT)	Dibutyltin Oxide	818-08-6
		Dibutyltin Diacetate	1067-33-0
		Dibutyltin Dilaurate	77-58-7
		Dibutyltin maleate	78-04-6
		Other Dibutyltin compounds	—

No.	Substance	CAS No.	
20	Diocetyl tin compounds (DOT)	Di-n-octyltin oxide	870-08-6
		Bis(lauroyloxy)diocetyl tin	3648-18-8
		Other Diocetyl tin compounds	—
21	Perfluorooctane sulfonates (PFOS)	Perfluorooctane sulfonates (PFOS)	—
22	Fluorinated greenhouse gases (HFC、PFC、SF6)	Trifluoromethane (HFC-23)	75-46-7
		Difluoromethane (HFC-32)	75-10-5
		Methyl fluoride (HFC-41)	593-53-3
		Pentafluoroethane (HFC-125)	354-33-6
		1,1,2,2-Tetrafluoroethane (HFC-134)	359-35-3
		1,1,1,2-Tetrafluoroethane (HFC-134a)	811-97-2
		1,1,2-Trifluoroethane (HFC-143)	430-66-0
		1,1,1-Trifluoroethane (HFC-143a)	420-46-2
		1,2-Difluoroethane (HFC-152)	624-72-6
		1,1-Difluoroethane (HFC-152a)	75-37-6
		Fluoroethane (HFC-161)	353-36-6
		1,1,1,2,3,3,3-Heptafluoropropane (HFC-227ea)	431-89-0
		1,1,1,2,2,3-Hexafluoropropane (HFC-236cb)	677-56-5
		1,1,1,2,3,3-Hexafluoropropane (HFC-236ea)	431-63-0
		1,1,1,3,3,3-Hexafluoropropane (HFC-236fa)	690-39-1
		1,1,2,2,3-Pentafluoropropane (HFC-236ca)	679-86-7
		1,1,1,3,3-Pentafluoropropane (HFC-236fa)	460-73-1
		1,1,1,3,3-Pentafluorobutane (HFC-365mfc)	406-58-6
		1,1,1,2,3,4,4,5,5,5-Decafluoropentane (HFC-43-10mee)	138495-42-8
		Tetrafluoromethane (Carbon tetrafluoride、PFC-Hexafluoroethane (PFC-116)	75-73-0
		76-16-4	
		Octafluoropropane (PFC-218)	76-19-7
		Decafluorobutane (PFC-31-10)	355-25-9
		Dodecafluoropentane (PFC-41-12)	678-26-2
		Tetradecafluorohexane (PFC-51-14)	355-42-0
		Octafluorocyclobutane (PFC-c318)	115-25-3
		Sulfur hexafluoride (SF8)	2551-62-4
23	2-Benzotriazol-2-yl-4,6-di-tert-butylphenyl	2-Benzotriazol-2-yl-4,6-di-tert-butylphenyl	3846-71-7
24	Dimethyl Fumarate (Fumaric Acid Dimethyl Ester) (DMF)	Dimethyl Fumarate (Fumaric Acid Dimethyl Ester)	624-49-7
25	Polycyclic Aromatic Hydrocarbons (PAH)	Benzo[a]pyrene (BaP)	50-32-8
		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
		Dibenz[a,h]anthracene (DBAhA)	53-70-3
26	N-Phenyl-benzenamine reaction products with styrene and 2,4,4-trimethylpentene (BNST)	N-Phenyl-benzenamine reaction products with styrene and 2,4,4-trimethylpentene (BNST)	68921-45-9
27	Di(2-ethylhexyl) phthalate (DEHP)	Di(2-ethylhexyl) phthalate (DEHP)	117-81-7
28	Dibutyl phthalate (DBP)	Dibutyl phthalate (DBP)	84-74-2
29	Butylbenzyl phthalate (BBP)	Butylbenzyl phthalate (BBP)	85-68-7
30	Phthalic Acid Diisobutyl Ester	Phthalic Acid Diisobutyl Ester (DIBP)	84-69-5

No.	Substance		CAS No.
31	Perfluorooctanoic acid (PFOA) and its salts, and PFOA-related	Perfluorooctanoic Acid	335-67-1
32		Pentadecafluorooctanoic acid	3825-26-1
		Perfluorooctanoic acid	335-95-5
			2395-00-8
			335-93-3
		Pentadecafluorooctyl fluoride	335-66-0
		Methyl Perfluorooctanoate	376-27-2
		Ethyl pentadecafluorooctanoate	3108-24-5
35	2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP)	2,4,6-Tris(tert-butyl)phenol (2,4,6-TTBP)	732-26-3
36	Phenol, isopropylated phosphate (3:1) (PIP (3:1))	Phenol, isopropylated phosphate (3:1) (PIP (3:1))	68937-41-7
37	Pentachlorothiophenol (PCTP)	Pentachlorothiophenol (PCTP)	133-49-3
38	Hexachlorobutadiene (HCBD)	Hexachlorobutadiene (HCBD)	87-68-3

6. Detailed Substances List (These lists are not comprehensive)

(2) Controlled substances

No.	Substance	CAS No.	
1	Beryllium oxide	Beryllium oxide 1304-56-9	
2	Nickel	Nickel 7440-02-0	
3	Brominated Flame Retardants (other than PBBs, PBDEs or HBCD)	Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(14) [Aliphatic/alicyclic brominated compounds]	—
		Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(15) [Aliphatic/alicyclic brominated compounds in combination with antimony compounds]	—
		Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(16) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls]	—
		Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(17) [Aromatic brominated compounds excluding brominated diphenyl ether and biphenyls] in combination with antimony compounds]	—
		Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(22) [Aliphatic/alicyclic chlorinated and brominated compounds]	—
		Brominated flame retardant which comes under notation of ISO 1043-4 code number FR(42) [Brominated organic phosphorus compounds]	—
		Poly(2,6-dibromo-phenylene oxide)	69882-11-7
		Tetra-decabromo-diphenoxy-benzene	58965-66-5
		1,2-Bis(2,4,6-tribromo-phenoxy) ethane	37853-59-1
		3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	79-94-7
		TBBA, unspecified	30496-13-0
		TBBA-epichlorhydrin oligomer	40039-93-8
		TBBA-TBBA-diglycidyl-ether oligomer	70682-74-5
		TBBA carbonate oligomer	28906-13-0
		TBBA carbonate oligomer, phenoxy end capped	94344-64-2
		TBBA carbonate oligomer, 2,4,6-tribromo-phenol terminated	71342-77-3
		TBBA-bisphenol A-phosgene polymer	32844-27-2
		Brominated epoxy resin end-capped with tribromophenol	139638-58-7
		Brominated epoxy resin end-capped with tribromophenol	135229-48-0
		TBBA-(2,3-dibromo-propyl-ether)	21850-44-2
		TBBA bis-(2-hydroxy-ethyl-ether)	4162-45-2
		TBBA-bis-(allyl-ether)	25327-89-3
		TBBA-dimethyl-ether	37853-61-5
		Tetrabromo-bisphenol S	39635-79-5
		TBBS-bis-(2,3-dibromo-propyl-ether)	42757-55-1
		2,4-Dibromo-phenol	615-58-7
		2,4,6-tribromo-phenol	118-79-6
		Pentabromo-phenol	608-71-9
		2,4,6-Tribromo-phenyl-allyl-ether	3278-89-5
		Tribromo-phenyl-allyl-ether, unspecified	26762-91-4
		Bis(methyl)tetrabromo-phthalate	55481-60-2
		Bis(2-ethylhexyl)tetrabromo-phthalate	26040-51-7
Continued 2-Hydroxy-propyl-2-(2-hydroxy-ethoxy)-ethyl-TBP	20566-35-2		

No.	Substance	CAS No.	
3	Brominated Flame Retardants (other than PBBs, PBDEs or HBCD)	TBPA, glycol-and propylene-oxide esters	75790-69-1
		N,N'-Ethylene -bis-(tetrabromo-phthalimide)	32588-76-4
		Ethylene-bis(5,6-dibromo-norbornane-2,3-dicarboximide)	52907-07-0
		2,3-Dibromo-2-butene-1,4-diol	3234-02-4
		Dibromo-neopentyl-glycol	3296-90-0
		Dibromo-propanol	96-13-9
		Tribromo-neopentyl-alcohol	36483-57-5
		Poly tribromo-styrene	57137-10-7
		Tribromo-styrene	61368-34-1
		Dibromo-styrene grafted PP	171091-06-8
		Poly-dibromo-styrene	31780-26-4
		Bromo-/Chloro-paraffins	68955-41-9
		Bromo-/Chloro-alpha-olefin	82600-56-4
		Vinylbromide	593-60-2
		Tris-(2,3-dibromo-propyl)-isocyanurate	52434-90-9
		Tris(2,4-Dibromo-phenyl) phosphate	49690-63-3
		Tris(tribromo-neopentyl) phosphate	19186-97-1
		Chlorinated and brominated phosphate ester	125997-20-8
		Pentabromo-toluene	87-83-2
		Pentabromo-benzyl bromide	38521-51-6
		1,3-Butadiene homopolymer, brominated	68441-46-3
		Pentabromo-benzyl-acrylate, monomer	59447-55-1
		Pentabromo-benzyl-acrylate, polymer	59447-57-3
		Decabromo-diphenyl-ethane	84852-53-9
		Tribromo-bisphenyl-maleinimide	59789-51-4
		Brominated trimethylphenyl indane	—
		Other Brominated Flame Retardants	—
		Tetrabromo-cyclo-octane	31454-48-5
1,2-Dibromo-4-(1,2 dibromo-methyl)-cyclo-hexane	3322-93-8		
Tetrabromophthalic acid Na salt	25357-79-3		
Tetrabromo phthalic anhydride	632-79-1		
4	Polyvinyl Chloride(PVC)	Polyvinyl chloride (PVC)	9002-86-2
5	Chlorine-based fire retardant	2,2-bis(chloromethyl)trimethylene bis(bis(2-chloroethyl)phosphate)	38051-10-4
		tris(2-chloro-1-methylethyl) phosphate	13674-84-5
		2,2-bis(bromomethyl)-3-chloropropyl bis[2-chloro-1-(chloromethyl)ethyl] phosphate	66108-37-0
6	Bis(n-octyl) phthalate (DNOP)	Bis(n-octyl) phthalate (DNOP)	117-84-0
7	Diisononyl Phthalate (DINP)	Diisononyl Phthalate (DINP)	28553-12-0 68515-48-0
8	Di-isodecyl phthalate (DIDP)	Di-isodecyl phthalate (DIDP)	26761-40-0 68515-49-1
9	Perchlorate	Lithium Perchlorate	7791-03-9