

Control Standard for Handling Chemical Substances in Products, Parts and Materials

The 13th Edition

Maxell, Ltd.

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1. Purpose

This control standard aims to prohibit, reduce, or appropriately control chemical substances contained in products and other articles to be produced and sold by Maxell, Ltd. and group company * (here in after referred to as "Maxell"), thus reducing the impacts of such substances on the global environment and making a sustainable society a reality.

* Companies that have joined the Maxell Group since October 2018 except.

2. Scope

This control standard shall apply to products, parts, materials, packing materials and auxiliary materials we purchase from our suppliers and our own products. This does not include products, parts and materials for research and development.

3. Terms and definitions

(1) Contained chemical substances

Chemical substances used in products, parts and materials (including packing materials).

(2) Inclusion

"Inclusion" shall refer to cases when a product, part or material includes a certain chemical substance at a rate exceeding the range where separation is technically possible without altering the form of an ordinary material. For the purpose of this standard document, it shall mean the inclusion of any such substance at a rate exceeding a specified control level.

(3) Non-inclusion

Non-inclusion shall refer to cases when a product, part or material does not include a specific environmental controlled chemical substance at a rate exceeding a specified control level, even if any portion is measured.

(4) Impurities

Chemical substances that are included in natural materials or industrially processed materials and which can't be technically removed in the separation process as unmodified materials. Provided that substances that are intentional addition shall not be called "impurities".

(5) Intentional addition

Intentional addition is the addition of substances for purpose of performance. Even if a small amount of the chemical substance was added (1mg or 1ppm), it is considered to be an inclusion.

(6) Crust

"Crust" shall refer to the portion of a product or part that is usually in contact with the atmosphere and to the surface where chemical substances are detected in an extraction test or other experiment.

(7) Control level

"Control level" shall refer to a level set by Maxell in this control standard and shall refer to the uppermost limit on a chemical substance included in a part or material which constitutes a product or other item.

(8) Packing materials

"Packing materials" shall refer to external film, internal cases, padding materials, corrugated cardboard, and related materials used to protect products, parts and materials. They include specific packing materials.

(9) Auxiliary materials

This term shall refer to labels, operation manuals and related materials sold together with products.

4. Standards for Controlling Contained Chemical Substances in Products

4.1 Controlled substances

Category	Controlled substances	Main laws
Level 1 *1	Chemical substances prohibited by Maxell. Chemical substances which may potentially be used for our products (including packing materials), though their use is prohibited or limited as per domestic or international laws or regulations. However, these standards do not apply under the following three conditions: 1) Concentration of the substances is not beyond the legal limits; 2) The substances are exempt from legal requirements; 3) Clients request to use the substances within a legally compliant range. See the "List of Level 1 Substances" (attached Table 3.1 or Attached list 1).	See attached Table 2.
Level 2 *2	Controlled substances whose intentional use is not limited under laws, but whose actual status of usage should be checked, or for which recycling or appropriate processing should be considered. See the "List of Level 2 Substances" (attached Table 3.2).	See attached Table 2.
Level 3 *3	Chemical substances prohibited or controlled by legal regulation or customer requirement concerning Maxell products.	See attached Table 2.

*1: Level 1 (prohibited substances)

- (1) Controlled substances are regulated in terms of intentional addition and numerical values.
- (2) It is considered an inclusion when a chemical substance is added over the controlled value in a homogeneous material, and its use is prohibited. (Mainly impurities)
- (3) A homogeneous material is the smallest unit that composes a part, and cannot be mechanically divided further.
- (4) About the thing that a regulation level is determined by laws and the thing which a customer requires, I give priority to a regulation level.

*2: Level 2 (controlled substances)

- (1) Please let us know if you know that any environmental substances are contained in products or parts you supply to us.
- (2) About the thing that a regulation level is determined by laws and the thing which a customer requires, I give priority to a regulation level.

*3: Level 3 (prohibited substances and controlled substances set by a customer demand)

- (1) Maxell manage it individually in each business headquarters.

The component data shall be measured values or design (theoretical) values.

4.2 Identification of Contained Chemical Substances in materials, parts, partially fabricated products, units or finished products

(1) Examination of Contained Chemical Substances in materials, parts, partially fabricated products, units or finished products:

(i) Controlled chemical substances to be examined:

Regarding Level 1 or 2 chemical substances, the department nominated by the Manager of each business group or unit shall obtain information concerning the chemical substances, presenting a supplier the drawing numbers, names, and other details of the target materials, parts, partially-fabricated products, units or finished products. However, the Manager of each business group or unit shall be authorized to reduce or make an exemption to the examination after assessing the abidance by laws and the efficiency of an examination based on his/her technical knowledge. Level 3 shall be left to the discretion of Maxell.

(ii) Examination unit:

RoHS: For each homogeneous material.

Not RoHS: For each supplied product or for each arbitrary class into which supplied products are divided.

(iii) Units of examination values:

When the substances of Level 1 are contained in products, units of examination values shall be measured based on (a) the mass of the denominator and numerator, or (b) the mass and concentration of the denominator, in each specified part including the substances. As to Level 2, when such substances are contained, the units of examination values shall be measured based on (c) the mass of the substances included in the units of purchase of materials, parts, partially fabricated products, units, or finished products, or (d) the mass of the substances of each hierarchical unit dividing the materials, parts, partially fabricated products, units or finished products into arbitrary levels. Level 3 shall be handled similarly to Levels 1 and 2 according to the management details.

(iv) Classification of examination values:

Regarding the classification of examination values, the maximum (a theoretical or actual value) shall be obtained for Level 1, while an average (theoretical or actual value) or maximum (theoretical or actual value) shall be obtained for Level 2. Level 3 shall be handled similarly to Level 1 and 2 according to the management details.

(v) Control level of the examination values:

(a) Intentional addition of controlled chemical substances:

When controlled chemical substances (Level 1, 2 or 3) are intentionally added, the value specified in Article 4, clause 2, (1), (iii) all be examined, and obtained.

(b) Unintentional addition of controlled chemical substances:

Unintentionally added chemical substances (Level 1, 2, or 3), which are generated or remain as impurities or by-products in manufacturing process, shall be handled as follows:

a) Level 1:

Check for the potential presence of a specific substance. If it can be contained, examine and obtain the values specified in Article 4, clause 2, (1), (iii).

b) Level 2:

Not only when is the substance identified but also when its value is figured out, examine and obtain

the value specified in Article 4, clause 2, (1), (iii) regardless of the originally identified values.

c) Level 3:

Level 3 shall be handled similarly to Levels 1 and 2 according to the management details.

The summary from (i) to (V) is as follows.

	Units of survey	Unit and classification of the examination values	Control level of the examination values	
			Intentionally added	Unintentionally added
Level 1	RoHS:For each homogeneous material. Not RoHS:For each supplied product or for each arbitrary class into	Units: in each part containing substances, (a) the mass of the denominator and the numerator or (b) the mass and concentration of the denominator: maximum (theoretical or actual value).	To be obtained regardless of the values.	To be obtained if the substances can be included.
Level 2	which supplied products are divided.	Units: the mass of the specific substance included in the units of purchase or each hierarchical unit dividing the items into arbitrary levels. Classification: Average (a theoretical or actual value) or maximum (a theoretical or actual value)	To be obtained regardless of the values.	To be obtained if the substances are identified and the values are figured out.

4.3 Definitions of the denominator and numerator of the mass of Contained Chemical Substances

(1) Definitions of the denominator and numerator of the mass of chemical substances included: Applied to Level 1.

(i) The denominator to measure the mass of chemical substances shall be the mass of the homogeneous materials (the same materials).

Composite materials and other substances are listed below:

	Composite materials	Definitions of the denominator
1	Compounds, alloys, etc.	To be homogeneous materials.
2	Paints, adhesives, ink, paste and other raw materials	The stuff ultimately formed in an assumed method shall be homogeneous material. (e.g.: the post drying and hardening status of paints and adhesives)

3	Materials that have undergone painting, printing, plating (chromate treatment) or other treatments	Each single layer shall be a homogeneous material. (When galvanization and chromate process is carried out, each of them shall be made of an individual homogeneous material.)
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(ii) Definition of the molecular mass in the mass measure of chemical substances:

	Chemical substances	Definition of the numerator
1	Metals and metal compounds	Mass of the metal element
2	Non-metals and non-metal compounds	Mass of the chemical substance

4.4 Priority standards

If there is more than one legal regulation, the legal regulation that favors a lower environmental impact shall be applied. Provided, however, that if there is a legal regulation that is to be given priority regarding the products and other articles to which it relates, that legal regulation shall be applied.

For example, the regulation values for heavy metals included in batteries shall conform to EU Battery Directive (2006/66/EC) and the control values concerning the crust of products that may be used in toys shall conform to the European Safety Standard for toys (EN71-3).

5. Implementation of the control levels

This standard shall come into effects on February 1, 2020.

As for 12th edition, an application is possible until January 31, 2020 as a transition period.

5.1 Survey of inclusion of environmental controlled chemical substances

The survey of chemical substances included in the parts and materials is requested to its suppliers, and the handling of chemical substances is thoroughly conducted in-house. Therefore, Maxell will make sure that the chemical substances included in the products are appropriately controlled. The suppliers shall conduct a survey for each part (or constituent unit in some cases) to confirm if any product, part, or material delivered to Maxell includes any environmental controlled chemical substance exceeding a specific standard. It shall be submitted the data by letter.

5.2 Guarantee to the non-inclusion of prohibited substances

To make sure that Maxell products do not include any prohibited substance, Maxell will request its suppliers to submit a guarantee of non-inclusion to ensure that the parts and materials do not include any prohibited substance.

Maxell may request the submission of a guarantee to the non-inclusion regarding un-prohibited substances.

5.3 Environmental Suppliers

Suppliers who have made eco-friendly efforts and have satisfied the following items ① and ② will be certified as "Environmental Suppliers". A certification of "Environmental Suppliers" is necessary to supply products, parts and materials from now on.

① "Maxell environmental suppliers" audit prescribed by Maxell is passed.

But, when a supplier takes a certification of ISO14001 or a third person environment certification system, Maxell considers him to "Environmental Supplier".

② "Memorandum of Non-inclusion of the Prohibited Chemical Substances in Products" is concluded.

6. Exemption

The chemical substances that have very high impacts on the global environment, human health or ecosystems should be prohibited immediately. However, those satisfying the requirements listed below may be exempted.

- ① Products, parts and materials which are exempted by legal regulations
- ② Those content of constituent units is no more than the control value.
- ③ Products, parts and materials that used Polyvinyl Chloride (PVC) except packing use.

6.1 Chemical substances exempted by legal regulations

(1) The materials of the batteries shown below can be made into the object of exclusion based on EU Battery Directive (2006/66/EC).

- ① Mercury in battery containing equal to or less than 0.0005% by weight. (Mercury in button battery containing equal to or less than 2% by weight)
- ② Cadmium in battery containing equal to or less than 0.002% by weight.
- ③ When Lead included in battery exceeds 0.004% by weight, Chemical sign "Pb" must be displayed to the battery by September 26,2009.

(2) The parts and materials shown below can be made into the object of exclusion based on RoHS Directive.

- ① Lead in glass of electronic components
- ② Lead as an alloying element in steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight.
- ③ Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead).
- ④ Lead in electronic ceramic parts (e.g. piezo electronic devices).
- ⑤ Lead and cadmium in optical and filter glass.
- ⑥ Lead contained in positive electrode of electrochemical oxygen sensor

In addition, other exclusions approved by RoHS Directive are included.

7. Analytic Processes

Follow the analysis method showed on table 1, or otherwise use a measurement method for substances which have equivalent accuracy or higher.

The analysis data may vary according to the process of preparing or analysis method. Therefore, the appropriate analysis process should be selected after consulting a specialist analysis agency.

8. Alteration History

Alteration points to the 13th edition from the 12th edition are as follows:

- Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA were prohibited from being manufactured, exported, or used at the POPRC Conference of the Parties and are prohibited from being manufactured, exported, or used by the Japan Chemical Examination Law/Type 1 specified chemical substances. Change (Level 2 → Level 1)
- PFHxS, its salts, and PFHxS-related substances were recommended to be prohibited from production, export, or use at the POPRC Conference of the Parties, and added to controlled substances (Level 2)
- Packaging material of PVC(level 2) was banned due to the difficulty of recycling due to revision of the Korean law.

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Products, Parts and Materials**

**The 13th Edition
Revision Date: January, 2020**

Issued by: Maxell, Ltd.

Attached Table of Control Standard for Handling Chemical Substances in Products, Parts and Materials

Table 1. Typical analytic processes

No.	Applicable substances to be measured	Analysis process
1	Mercury and mercury compounds	Acid decomposition/method for producing the atomic vapor by reduction
2	Cadmium and cadmium compounds, lead and lead compounds, chromium compounds	Acid decomposition/optical emission spectrometry with inductively coupled plasma (ICP-AES)
3	Hexavalent chromium compounds	Extraction in inert gases/diphenyl carbazides absorptiometry
4	Quantification of chlorine and bromine	Combustion-ion chromatography
5	Detection of the total bromine content of PBB and PBDE, quantification of organic tin compounds, quality determination of polychlorinated naphthalene	Gas chromatography/mass spectrometry (GC/MS)
6	PCBs	GC/ECD process
7	Chlorinated paraffins	Column chromatography/GPC process
8	Quantification of total halogen (chlorine and bromine)	TOX meter
9	Quality analysis of polyvinyl chloride	THF dissolution/IR spectroscopy
10	Asbestos	X-ray diffraction or microscopy
11	Azo compounds	Buffer extraction/HPLC process
12	Detection of the total bromine other than PBB and PBDE	GC/AED process
13	Aromatic amines, fluoroacetic acids	Solvent extraction-derivatization/GC/MS process
14	Simple analysis of elements heavier than sodium	Fluorescent X-ray analysis
15	Metal elements	Atomic absorption spectrometry ICP-AES
16	Process for testing the eluted toxicity of hazardous substances as per the Resource Conservation and Recovery Act (RCRA) of the US Environmental Protection Agency	PCLP process (Toxicity Characteristic Leaching Procedure)
17	Phthalates(DEHP,BBP,DBP,DIBP)	Py-TD/ GC/MS, Solvent extraction-derivatization/GC/MS process

Table 2. Laws and Regulations for environmental controlled chemical substances

Table 2 shows each level 1 (prohibited substances) substance or substance group, and relevant regulations.

Table 2 shows each substance or substance group that belongs to level 2 (controlled substances).

For numbers 1 through 5 and 20 through 23, any items corresponding to those excluded from application according to the RoHS orders (EU) shown in Attached URL (See the upper part of page15) are excluded. However, you must report the reason for exclusion (e.g., an exclusion code).

For substances that count as REACH/restricted substances, or for details, see Attached list3, and for details about REACH/permitted substances or SVHC substances, see Attached URL (See the upper part of page15).

In order to use this for work such as information disclosure in supply chains, report information on the presence of the chemical substances below.

No.	Environmental Controlled Substances	Laws and Regulations
1	Cadmium and its compounds	EU REACH Regulation EU RoHS Directive EU Packing and Packing Waste Directive EU Battery Directive EU Safety of Toys Directive Danish Regulation
2	Hexavalent chromium and its compounds	EU REACH Regulation EU RoHS Directive EU Packing and Packing Waste Directive EU Safety of Toys Directive
3	Lead and its compounds	EU REACH Regulation , EU RoHS Directive EU Packing and Packing Waste Directive EU Battery Directive EU Safety of Toys Directive USA Proposition 65(California State)
4	Mercury and its compounds	EU REACH Regulation , EU RoHS Directive EU Packing and Packing Waste Directive EU Battery Directive EU Safety of Toys Directive
5	Polybrominated biphenyls (PBBs) Polybrominated diphenyl ethers (PBDEs)	EU RoHS Directive
6	Tri-substituted organostannic compounds#2 Bis tributyltin oxide (TBT0) Tributyltin compounds (TBT) Triphenyltin compounds (TPT) etc	Japan Chemical Examination Law/Type 1 specified chemical substances EU REACH Regulation

No.	Laws and Regulations	Environmental Controlled Substances
7	Polychlorinated biphenyls (PCBs)	Japan Chemical Examination Law/Type 1 specified chemical substances EU REACH Regulation
8	Polychlorinated terphenyls#2 (PCTs)	EU REACH regulation
9	Polychloronaphthalenes (Cln: n≥2)	Jpn. Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (The first kind Specified Chemical Substance)
10	Short-chain chlorinated paraffins	EU REACH Regulation
11	Asbestos	EU REACH Regulation Jpn. Occupational Health and Safety Law
12	Ozone depleting substances (Class 1)	Montreal Protocol on Substances that Deplete the Ozone Layer USA Clean Air Act
13	Ozone depleting substances (Class 2) Substitute Freon (HCFCs)	Montreal Protocol on Substances that Deplete the Ozone Layer USA Clean Air Act
14	Radioactive substances	Jpn. Law concerning Restriction of Nuclear Source Material, Nuclear Fuel Material, and Nuclear Reactor
15	PFOS and its analogous compounds For substances that apply, see Attached list 2.	Japan Chemical Examination Law/Type 1 specified chemical substances POPs
16	2-(2H-1, 2, 3-Benzotriazole-2-YL)-4, 6-di-tert-Butylphenol	Japan Chemical Examination Law/Type 1 specified chemical substances
17	Hexachlorobenzene	Japan Chemical Examination Law/Type 1 specified chemical substances, REACH regulation (EU), POPs
18	Dimethyl fulmarate (DMF)#2	REACH regulation (EU)
19	Hexabromocyclododecane (HBCD or HBCDD)	Japan Chemical Examination Law/Type 1 Specified Chemical Substances POPs
20	Bis (2-ethylhexyl) phthalate (DEHP)	EU REACH Regulation ,EU RoHS Directive
21	Benzyl butyl phthalate (BBP)	EU REACH Regulation ,EU RoHS Directive
22	Dibutyl phthalate (DBP)	EU REACH Regulation ,EU RoHS Directive
23	Diisobutyl phthalate (DIBP)	EU REACH Regulation ,EU RoHS Directive
24	Antimony and its compounds	EU Safety of Toys Directive

No.	Laws and Regulations	Environmental Controlled Substances
25	Arsenic and its compounds	EU Safety of Toys Directive
26	Beryllium and its compounds#6	JPN Industrial Safety and Health Law (Manufacturing licence)
27	Nickel and its compounds	EU REACH Regulation
28	Selenium and its compounds	EU Safety of Toys Directive
29	Un-specific brominated flame retardants#7	JEDEC JS709 IPC-4101 and IEC61249-2-21
30	Polyvinyl chlorides (PVCs) and its mixture, its copolymer	JS709, Korean law
31	Pthalate esters	EU REACH Regulation
32	Di-substituted organostannic compounds (DBT, DOT, etc.)	EU REACH Regulation
33	Cobalt and its compounds#6	EU Safety of toys Directive EU REACH Regulation
34	Specified azo compounds specified cracked amine (Azo dye, pigment)	EU REACH Regulation
35	Formaldehyde	JPN Law for the Control of Household Products containing Harmful Substances GER Prohibition of Chemicals Ordinance – ChemVerbotsV
36	Benzene	JPN Industrial Safety and Health Law (Labelling duty of notifiable substances and Specified Group-2 Substances of Ordinance on Prevention of Hazards Due to Specified Chemical Substances)
37	Fluorine-based greenhouse gases	JPN Law Concerning the Promotion of Measures Against Global Warming EU Regulation
38	Polycyclic-aromatic hydrocarbons (PAHs) corresponding to REACH/restriction substance	EU REACH Regulation/Restriction
39	Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA	Domestic law in Norway, POPs, Japan Chemical Examination Law/Type 1 specified chemical substances (from January, 2020), EU REACH Regulation/Restriction
40	PFHxS, its salts, and PFHxS-related substances (Transition to level 1 from 2022)	POPs, Japan Chemical Examination Law/Type 1 specified chemical substances (from January, 2022), EU REACH Regulation/Restriction

No.	Laws and Regulations	Environmental Controlled Substances
40	REACH/restriction substances (For applicable substances, or for details, see Attached list3.)	EU REACH Regulation/Restriction
41	REACH/authorization substances (For applicable substances, see Attached list 7.)	EU REACH Regulation/Authorization
42	RECAH/SVHC (For applicable substances, see Attached list 7.)	EU REACH Regulation/SVHC
43	chemSHERPA declarable substances	chemSHERPA managed substances

Table 3.1 Chemical substances prohibited by Maxell (Level 1)

No.	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
1	Cadmium and its compounds *1	Cadmium Cadmium oxide Cadmium sulfide Cadmium chloride Cadmium sulfate Other cadmium compounds	7440-43-9 1306-19-0 1306-23-6 10108-64-2 10124-36-4 —	100ppm, 100ppm(Package)*2 or Intentional
2	Hexavalent chromium and its compounds *1	Sodium dichromate Sodium dichromate Chromium trioxide Calcium chromate Lead(II)chromate Potassium dichromate Potassium chromate Chromium(VI)oxide Barium chromate Sodium chromate Strontium chromate Zinc chromate Other hexavalent chromium compounds	10588-01-9 7789-12-0 1333-82-0 13765-19-0 7758-97-6 7778-50-9 7789-00-6 1333-82-0 10294-40-3 7775-11-3 7789-06-2 13530-65-9 —	1000ppm, 100ppm(Package)*2 or
3	Lead and its compounds *1	Lead Lead(II)carbonate Lead(IV)oxide Lead(II,IV)oxide Lead(II)sulfide Lead(II)oxide Lead(II)carbonate basic Lead hydroxidcarbonate Lead(II)sulfate Lead(II)phosphate Lead(II)chromate Lead(II)titanate Lead sulfat Lead acetate Lead(II)acetate, trihydrate	7439-92-1 598-63-0 1309-60-0 1314-41-6 1314-87-0 1317-36-8 1319-46-6 1344-36-1 7446-14-2 7446-27-7 7758-97-6 12060-00-3 15739-80-7 301-04-2 6080-56-4	1000ppm, 100ppm(Package)*2,

*1 The metal contains the alloy.

*2 The chemical substances contained in the package are less than 100ppm on four metals total.

No.	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
3	Lead and its compounds *1	Lead phosphate Lead selenide Lead sulphate, tribasic Lead stearate Lead hydrogen arsenate Other lead compounds	7446-27-7 12069-00-0 12202-17-4 1072-35-1 7784-40-9 —	1000ppm, 100ppm (Package) *2,
4	Mercury and its compounds *1	Mercury Mercuric chloride Mercury(II)chloride Mercury(II)oxide Mercuric sulfate Mercuric nitrate Mercuric sulfide Other mercury compounds	7439-97-6 10112-91-1 7487-94-7 21908-53-2 7783-35-9 10045-94-0 1344-48-5 —	1000ppm, 100ppm (Package) *2 or
5	Polybrominated biphenyls (PBBs) Polybrominated diphenyl ethers (PBDEs)	Polybrominated biphenyls Pentabromodiphenylether 2-Bromobiphenyl 3-Bromobiphenyl 4-Bromobiphenyl Bromobiphenylethers Decabromobiphenyl Decabromobiphenylethers Dibromobiphenyl Dibromobiphenylethers Heptabromobiphenylether Hexabromobiphenyl Hexabromo-1,1.-biphenyl Hexabromobiphenylethers Nonabromobiphenylether Octabromobiphenyl Octabromodiphenylether Tetrabromobiphenyl Tetrabromobiphenylethers Tribromobiphenylether Hexabromobiphenyls mixture	59536-65-1 32534-81-9 2052-07-5 2113-57-7 92-66-0 101-55-3 13654-09-6 1163-19-5 92-86-4 2050-47-7 68928-80-3 59080-40-9 36355-01-8 36483-60-0 63936-56-1 61288-13-9 32536-52-0 40088-45-7 40088-47-9 49690-94-0 67774-32-7	1000ppm

*1 The metal contains the alloy.

*2 The chemical substances contained in the package are less than 100ppm on four metals total.

No.	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
6	Tributyltins (TBTs) Triphenyltins (TPTs) *3	Tributyltin chloride Triphenyltin chloride Bis(tri-n-butyltin)oxide Triphenyl tin N, N' - dimethyldithiocarbamate Triphenyltin fluoride Triphenyltin acetate Triphenyltin hydroxide Triphenyltin fatty acid salts (C=9-11) Triphenyltin chloroacetate Tributyltin methacrylate Bis(tributyltin) fumarate Tributyltin fluoride Bis(tributyltin) 2,3-dibromosuccinate Tributyltin acetate Tributyltin laurate Bis(tributyltin) phthalate Tributyltin sulfamate Bis(tributyltin) maleate Other tributyltin compounds Other triphenyltin compounds	1461-22-9 639-58-7 56-35-9 1803-12-9 379-52-2 900-95-8 76-87-9 47672-31-1 7094-94-2 2155-70-6 6454-35-9 1983-10-4 31732-71-5 56-36-0 3090-36-6 4782-29-0 6517-25-8 14275-57-1 — —	Intentional use is prohibited, however, 1000ppm or less as tin
7	Bis tributyltin oxide (TBT0) *3	Bis(tri-n-butyltin) oxide	56-35-9	Intentional use is prohibited, however, 1000ppm or less as tin
8	Polychlorinated biphenyls (PCBs)	Polychlorinated biphenyls Chlorinated terphenyls Aroclor Chlorodiphenyl (aroclor 1260) Kanechlor 500 Aroclor 1254 Terphenyls Other polychlorinated biphenyls	1336-36-3 61788-33-8 12767-79-2 11096-82-5 27323-18-8 11097-69-1 26140-60-3 —	Intentional use is prohibited
9	Polychlorinated terphenyls#2 (PCTs) *3	Polychlorinated terphenyls	61788-33-8	Intentional use is prohibited

*3 The REACH restrictions material which judged that a use, the handling were equivalent to full-scale regulation

No.	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
10	Polychloronaphthalenes (Cln : n≥2)	Polychlorinated naphthalenes Octachloronaphthalene Tetrachloronaphthalene Hexachloronaphthalene Other polychlorinated naphthalenes	2234-13-1 70776-03-3 1335-88-2 1335-87-1 —	Intentional use is prohibited
11	Short-chain chlorinated paraffins *3	Chlorinated paraffines (C10-13) Other short-chain chlorinated paraffines	85535-84-8 —	Intentional use is prohibited
12	Asbestos *3	Amosite (Grunerite) Crocidolite Chrysotile Actinolite Anthophyllite Tremolite Other asbestos	12172-73-5 12001-28-4 12001-29-5 77536-66-4 77536-67-5 77536-68-6 1332-21-4	Intentional use is prohibited , however, 1000ppm or less
13	Ozone depleting substances (Class 1)	See Attached list1	See Attached list 2	Intentional use is prohibited
14	Ozone depleting substances (Class 2) Substitute Freon (HCFCs)	See Attached list1	See Attached list 2	Intentional use is prohibited
15	Radioactive substances	Uranium (U) Plutonium (Pu) Thorium (Th) Radon (Rn) Americium (Am) Cesium (Cs) Strontium (Sr) Other radioactive substance	7440-61-1 — — — — 7440-46-2 7440-24-6 —	Intentional use is prohibited
16	PFOS <Perfluorooctanesulfonic acid> and its analogous compounds	PFOS and its analogous compounds For substances that apply, see Attached list 3.	See Attached list 3	Intentional use is prohibited

*3 The REACH restrictions material which judged that a use, the handling were equivalent to full-scale regulation

No.	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
17	2-(2H-1, 2, 3-Benzotriazole-2-yl)-4, 6-di-tert-Butylphenol	2-(2H-1, 2, 3-Benzotriazole-2-yl)	3846-71-7	Intentional use is prohibited
18	Hexachlorobenzene	Hexachlorobenzene	118-74-1	Intentional use is prohibited
19	Dimethyl fulmarate (DMF) #2	Dimethyl fulmarate (DMF)	624-49-7	0.1ppm or less
20	Hexabromocyclododecane (HBCD or HBCDD)	See Attached list 6.	See Attached list 6	Intentional use is prohibited
21	Bis (2-ethylhexyl) phthalate (DEHP) *2	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	1000ppm
22	Benzyl butyl phthalate (BBP) *2	Benzyl butyl phthalate (BBP)	85-68-7	1000ppm
23	Dibutyl phthalate (DBP) *2	Dibutyl phthalate (DBP)	84-74-2	1000ppm
24	Diisobutyl phthalate (DIBP) *2	Diisobutyl phthalate (DIBP)	84-69-5	1000ppm
25	Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA	See Attached list6	See Attached list6	Intentional use is prohibited

Table 3.2 Controlled substances which actual status of usage should be checked (Level 2)

No.	Environmental Controlled Substances	Name of Substance	CAS No.
1	Antimony and its compounds *1	Antimony	7440-36-0
		Stibine (Antimony hydride)	7803-52-3
		Antimony pentoxide	1314-60-9
		Antimony pentafluoride	7783-70-2
		Antimony trioxide	1309-64-4
		Antimony trichloride	10025-91-9
		Sodium antimonite	15432-85-6
		Other antimony compounds	—
2	Arsenic and its compounds *1	Arsenic (As)	7440-38-2
		Gallium arsenide	1303-00-0
		Arsenic pentoxide	1303-28-2
		Arsenic trioxide	1327-53-3
		Calcium arsenate	7778-44-1
		Calcium arsenite	27152-57-4
		Potassium arsenite	10124-50-2
		Potassium arsenate	7784-41-0
		Lead arsenate	3687-31-8
		Triethyl arsenate	15606-95-8
		Other arsenic compounds	—
3	Beryllium and its compounds *1	Beryllium	7440-41-7
		Beryllium oxide	1304-56-9
		Beryllium-Aluminum Alloy	12770-50-2
		Beryllium chloride	7787-47-5
		Beryllium fluoride	7787-49-7
		Beryllium hydroxide	13327-32-7
		Beryllium phosphate	13598-15-7
		Beryllium sulfate	13510-49-1
		Beryllium sulfate tetrahydrate	7787-56-6
		Beryl ore	1302-52-9
		Other beryllium compounds	—

*1 The metal contains the alloy, but Nickel is exempted.

*2 Transition to Level 1 from July 22, 2019

No.	Environmental Controlled Substances	Name of Substance	CAS No.
4	Nickel and its compounds (Exclusion of Alloy)*1, *2	Nickel	7440-02-0
		Nickel(II)oxide	1313-99-1
		Nickel(II)carbonate	3333-67-3
		Nickel(II)sulfate	7786-81-4
		Other nickel compounds	—
5	Selenium and its compounds *1	Selenium	7782-49-2
		Hydrogen selenide	7783-07-5
		Selenium dioxide	7446-08-4
		Selenium hexafluoride	7783-79-1
		Sodium selenide	1313-85-5
		Sodium selenate	10112-94-4
		Dimethyl selenide	593-79-3
		Selenium oxide	12640-89-0
		Other Selenium compounds	—
6	Brominated flame retardant (except PBBs, PBDEs)	3, 5, 3', 5' -Tetrabromo-bisphenol A (TBBA)	79-94-7
		2, 4-Dibromo-phenol	615-58-7
		2, 4, 6-Tribromo-phenol	118-79-6
		Pentabromo-phenol	608-71-9
		Dibromo-propanol	96-13-9
		Vinylbromide	593-60-2
		Pentabromo-toluene	87-83-2
		Tetrabromo phthalic-anhydride	632-79-1
		Hexabromocyclododecane (HBCDD)	25637-99-4
		Other brominated flame retardant	—
7	Polyvinyl chloride (PVC)*3 (Prohibited only for Korea)	Polyvinyl chloride (CH ₂ -CHCL) _n	9002-86-2
8	Specified Phthalates	Diheptylnonylundecyl phthalate (DHNUP)	68515-42-4
		1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	
		Diisooheptyl phthalate (DIHP)	71888-89-6
		1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	
		Phthalic acid bis(2-methoxyethyl)	117-82-8
		Diisononyl phthalate (DINP)	28553-12-0
		n-Dioctyl phthalate (DNOP)	117-84-0
		Diisodecyl phthalate (DIDP)	26761-40-0

*1 The metal contains the alloy, but Nickel is exempted.

*2 Nickel is applied to the use with the possibility of touching for long periods of time (Outside of portable electronic equipment designed as portable, etc.).

*3 It is applied only packing use.

No.	Environmental Controlled Substances	Name of Substance	CAS No.
9	Di-substituted organostannic compounds (DBT, DOT, etc.)	Dibutyltin compounds (DBT) Diocetyl tin compounds (DOT) Other di-substituted organostannic compounds	- - -
10	Cobalt and its compounds#6	Cobalt(II) chloride Cobalt(II) sulfate Cobalt(II) nitrate Carbonic acid cobalt(II) Cobalt(II) acetate	7646-79-9 12179-04-3 12267-73-1 10124-43-3 10141-05-6
11	Specified azo compounds Specified cracked Amine (Azo dye, pigment)	See Attached list4	See Attached list4
12	Formaldehyde	Formaldehyde	50-00-0
13	Benzene	Benzene	71-43-2
14	Fluorine-based greenhouse gases	HFC PFC SF6	- - -
15	Polycyclic-aromatic hydrocarbons (PAHs) corresponding to REACH/restriction substance	See Attached REACH/SVHC URL	See Attached REACH/SVHC URL
16	Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA Transition to level 1 from January 2020 PFHxS, its salts, and PFHxS-related substances (Transition to level 1 from 2022)	See Attached list6 PFHxS, its salts, and PFHxS related substances	See Attached list6 -
17	REACH/restriction substances (For applicable substances, or for details, see Attached list 3)	See Attached list3	See Attached list3

No.	Environmental Controlled Substances	Name of Substance	CAS No.
18	REACH/authorization substances	See Attached REACH/SVHC URL	See Attached REACH/SVHC URL
19	RECAH/SVHC	See Attached REACH/SVHC URL	See Attached REACH/SVHC URL
20	chemSHERPA declarable substances *4	Declarable substances regulated by the Joint Article Management Promotion consortium.	-

*4 Declarable substances regulated by the Joint Article Management Promotion consortium.

Substances to which the following laws and industry standards apply are included:

1. Japan Chemical Examination Law/Type 1 specified chemical substances
2. TSCA (substances subject to prohibition or restriction (Article 6))
3. ELV directive
4. RoHS directive
5. POPs regulation Annex I
6. REACH certified candidate substances (SVHC) and Annex X IV
7. REACH Annex XVII (restriction substances)
8. GADSL
9. IEC62474

For details, refer to the following document, list.

"ChemSHERPA Managed Substance Reference Manual", "chemSHERPA Controlled Substance Reference List" (latest version)

Refer to: <https://chemsherpa.net/chemSHERPA/tool/>

Attachment list

Attached list1: Ozone-layer-depleting substances list

Attached list2: PFOS and its analogous compounds list

Attached list3: REACH/restriction substance list

Attached list4: Specific amine list

Attached list5: Hexabromocyclododecane (HBCD or HBCDD) list

Attached list6: Perfluorooctanoic acid (PFOA) and its salts and its esters list

RoHS Directive / List of Exemptions See below

http://ec.europa.eu/environment/waste/rohs_eee/legis_en.htm

ANNEX III: <https://eudirective.net/rohstekiyougai/rohs2annex3.html>

ANNEX IV: <https://eudirective.net/rohstekiyougai/rohs2annex4.html>

Refer to the list of SVHC of REACH rule below

<https://echa.europa.eu/candidate-list-table>

Alteration History of Attached Table

Date	Contents
July 1, 2008	<p>8 substances of customer requirement were added to Table 3.3.</p> <p>PFOS(Perfluorooctanesulfonic acid), TBBP-A(Tetra Bromo Bisphenol-A), PAHs(PolycyclicAromatic Hydrocarbons), Ethylene glycol Methyl ester, Ethyl ester and those derivative, Polybinyl chloride and its monomer, Beryllium and its compounds, Dioxin halide, and Furan were added.</p>
January 1, 2009	<p>(1) 15 substances of REACH Regulation Candidate List were added to Table 3.1 and 3.2.</p> <p>Sodium dichromate dihydrate, Lead hydrogen arsenate, Bis(tributyltin)oxide, Alkanes C10-13 chloro(Short chain chlorinated paraffins), Anthracene, 4,4' -Diaminodiphenylmethane, Cobalt dichloride, Diarsenic pentaoxide, Diarsenic dichromate, Musk xylene, Bis(2-ethyl hexyl phthalate, Hexabrocyclododecane, Benzyl butyl phthalate, Triethyl arsenate, Diobutyl phthalate</p> <p>(2) 19 substances of Customer requirement were added to Table 3.3.</p> <p>Asbestos, Brominated Flame Retardants, Certain Azo Colorants, Chlorinated Hydrocarbons, Formaldehyde, Formaldehyde-Emission, Hexavalent Chromium and its compounds, Nickel, Ozone Depleting Substances(ODS), Polycyclic Aromatic Hydrocarbons(PAH), Perfluorooctane Sulfonates(PFOS), Polychlorinated Biphenyls(PCBs), Polychlorinated Terphenyls(PCTs), Polychlorinated Naphthalenes, Polyvinyl Chloride(PVC), Radioactive Substances, Tributyl Tin(TBT), Triphenyl Tin(TPT), Tributyl Tin Oxide(TBTO)</p>
July 1, 2010	<p>(1) 14 substances and Acrylamide of REACH Regulation Candidate List were added to Table 3.1 and 3.2.</p> <p>Lead chromate, Lead chromate molybdate sulfate red(C.I. Pigment Red 104), Lead sulfochromate yellow(C.I. Pigment Yellow 34), Diisobutyl phthalate, Anthracene oil, Anthracene oil,anthracene paste,distn, lights, Anthracene oil,anthracene paste,anthracene fraction, Anthracene oil anthracene-low, Anthracene oil,anthracene paste, Coal tar pitch,high temperature, Alminosilicate,refractory ceramic fibres, Tris(2-chlororthyl)phosphate, Zirconia aluminosilicate,refractory ceramic fibres, 2,4-Dinitrotoluene, Acrylamide,</p> <p>(2) 8 substances of Customer requirement were added to Table 3.3.</p> <p>Beryllium oxide, Brominated flame retardants, Chlorinated flame retardants, Musk fragrance substance, Volatile organic compound(VOC), Bisphenol A, Triclosan, Surfactants</p> <p>(3) Table 2 was reviewed.</p> <p>(4) JEITA Class No. was deleted from Table 2,3-1,3-2 and 3-3.</p>
September 1, 2010	<p>(1) 8 substances of REACH Regulation Candidate List were added to Table 3.1 and 3.2.</p> <p>Trichloroethylene, Boric acid, Disodium tetraborate,anhydrous, Tetraboron disodium heptaoxide,hydrate, Sodium chromate, Potassium chromate, Ammonium dichromate, Potassium dichromate</p> <p>(2) Because 6 substances of the following were authorized to "List of Substances subject to Authorization" by the TBT Report, these substances were changed from Candidate List of SVHC in Table 3.2 (controlled substances) to Candidate List in Table 3.1(prohibited substances).</p> <p>4,4' -Diaminodiphenylmethane, Dibutyl phtalate, Musk xylene, Bis(2-ethyl hexyl) phtalate, Hexabromocyclododecane, Benzyl butyl phthalate</p>

Date	Contents
January 14, 2011	<p>(1) 8 substances of REACH Regulation Candidate List were added to Table 3.1 and 3.2. Cobalt(II) sulphate, Cobalt(II) dinitrate, Cobalt(II) carbonate, Cobalt(II) diacetate 2-Methoxyethanol, 2-Ethoxyethanol, Chromium trioxide Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid</p>
September 20, 2013	<p>(1) Revision of controlled substance groups in Table 2, Table 3.1 and Table 3.2. (2) Correction of related body text according to the above changes.</p>
October 1, 2015	<p>(1) The change of Table 2 : The addition of No.19–No.23 and No 38–No40 (2) The change of Table 3.1 : The addition of No. 20 (3) The change of Table 3.2 : The addition of No. 1–No4 and No 19–21</p>
January 1, 2019	<p>(1) Since the RoHS Directive (2002/95 / EC) of Attached Table 2 has been discontinued, the notation (2002/95 / EC) is deleted (2) BNST of Attachment 2 No. 40 and Appended Table 3.2 No.21 was removed as it was excluded under Canadian domestic law, so delete (3) Appended Table 3.1 Chlorine number of No. 10 was corrected to 2 chlorine number (4) Add (Including chemSHERPA * 5) to Annex Table 2, Annex Table 3.2 No.25 and describe the substances to be controlled prescribed by chemSHERPA in * 5</p>
July 22, 2019	<p>(1) Analysis method of phthalates (DEHP, BBP, DBP, DIBP) added to Table 1 because they have become prohibited substances in the RoHS Directive (Level 2 → Level 1). (2) Transfer of phthalates (DEHP, BBP, DBP, DIBP) from Annex 3.2 (Level 2) to Annex 3.1 (Level 1) (3) Delete the scheduled transition date from Level 2 → Level 1 of Annex 2 and Annex 3.2 annotations (4) Delete URL referenceable items and unnecessary parts in the attached table list</p>
January 1, 2020	<p>(1) With the prohibition of perfluorooctanoic acid and its salt and its ester (PFOA) from the POPs Convention and the Chemical Substances Control Law (from Level 2 to Level 1), Table 2 (from January 2020) was deleted. Moved from 3.2 (Level 2) to Appendix 3.1 (Level 1) and deleted (from January 2020) (2) PFHxS and its salts and PFHxS-related substances in accordance with the POPs Convention Recommendation, controlled substances added to (Level 2) and added to Appendix 3.2 No.16 (3) PVC packaging material (level 2) has been banned due to revision of Korean law. added "Prohibited only for Korea".</p>