

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

The 17th 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 joined the maxell group after October 2018 are excepted.

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) Homogeneous material: "Homogeneous material" is the smallest unit that composes a part, and cannot be mechanically divided further.
- (8) 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.
- (9) 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.
- (10) 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 prohibited substances group*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, if the customer demand is stricter than law regulation, we obey the demand. It depends on "Table 3.1 Chemical substances prohibited for use in Maxell (Level 1)".	Refer to table 2.
Level 2 controlled substances group *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 "Table 3.2 Substances which	Refer to table 2.

Category	Controlled substances	Main laws
	actual usage status and control are required. (Level 2)"".	
Level 3 prohibited or controlled substances set by customer demand *3	Chemical substances prohibited or controlled by customer requirement concerning Maxell products.	Refer to 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 or in any delivered product is considered an inclusion and its use is prohibited. (Mainly impurities)
- ③ We give priority to the regulation value which required by laws or demanded by our customer.

*2 Level 2 (controlled substances)

- ① Please let us know when any inclusion is found as far as you know.
- ② We give priority to the regulation value which required by laws or demanded by our customer.

*3 Level 3 (prohibited or controlled substances set by customer demand)

- ① Maxell's each business headquarter manages those including survey methods in chapter 4.2 and the contents of it.

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, partially fabricated products, units or finished products:

- ① 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.
- ② Examination unit:
RoHS: For each homogeneous material. Not RoHS: For each supplied product or for each arbitrary class into which supplied products are divided.
- ③ 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.
- ④ Classification of survey numerical values *:
As the survey numerical value, answer the maximum value (theoretical value or actual measurement value) in Level 1 and answer an average value (theoretical value or actual measurement value) or the maximum value (theoretical value or actual measurement value) in Level 2.

*: When the maximum values are answered in Level 1 and Level 2, the total amount including other substances should be set under 110 %.

⑤ Control level of the examination values:

a) Intentional addition:

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

b) Unintentional addition

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

1. 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), ③.

2. 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), ③ regardless of the originally identified values.

The summary from ① to ⑤ is as follows.

	Units of survey	Unit and classification of the survey values	Control level of the survey values	
			Intentional addition	Unintentional addition
Level 1 prohibited substances group*1	RoHS: Homogeneous material. Other than RoHS: For each supplied product or for each arbitrary class into which supplied products are divided.	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 controlled substances group *2		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

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

- ① 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.	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.)

- ② 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 other chemical substance

4.4. Priority standards

When any prior law regulation exists, it applied for the product.

For example, the regulation values for heavy metals included in batteries shall conform to EU Battery Regulation((EU)2023/1542) and the control values concerning the crust of products that may be used in toys shall conform to “Safety of toys - Migration of certain elements (EN71-3)”.

5. Implementation of the control levels

This standard shall come into effects on August 1, 2025.

As for the 16th edition, an application is possible until July 31, 2025, 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. Procedures for Suppliers

“Memorandum of Non-inclusion of the Prohibited Chemical Substances in Products” must be 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 Batteries Regulation ((EU) 2023/1542).
 - 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 portable battery containing equal to or less than 0.002% by weight.
 - ③ Lead in battery containing equal to or less than 0.004% by weight.
 - ④ Lead in portable batteries containing equal to or less than 0.01wt% by weight (Starting August 18, 2024)
- (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.
 - ⑦) Mercury in other discharge lamps for special purposes not specifically mentioned in Annex III (e.g. mercury lamp of the projector).

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

7. Analytic Processes

Follow the analysis method shown 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

Changed items from the 16th edition.

- Corrected misspellings.
- Moved the sentence about "Homogeneous material" to "3. Terms and definitions" from "*1 Level 1(prohibited substances)" in "4.1. Controlled substances".
- Added "a survey methods in chapter 4.2 and the contents of it." to "*3 Level 3 (prohibited or controlled substances set by customer demand)" in "4.1. Controlled substances".
- Changed the value "100 %" to "110 %" of "④ Classification of survey numerical values" in chapter 4.2 by the rule of chemSHERPA.
- Changed the sentences of "4.4. Priority standards". Renewed the name of law, "EU Battery Directive (2006/66/EC)" to "EU Battery Regulation((EU)2023/1542)".
- Added "Methoxychlor", "Medium-chain chlorinated paraffins" and "Long-chain perfluorocarboxylic acids, their salts and related compounds" to the prohibited substances.

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

Table 1 Analysis method

No.	Applicable substances to be measured	Analysis method
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
18	PFAS	Solvent extraction-derivatization/ LC-MS/MS process

Table 2 Control applicable substances groups and Laws and Regulations

※ Table 2 show substance groups and reference laws about Level 1: prohibited substances group and Level 2: controlled substances group.

No.	controlled applicable substances group	Laws and Regulations
1	Cadmium and its compounds	EU REACH Regulation/Restriction, EU RoHS Directive, EU Packing and Packing Waste Directive, EU Battery Regulation((EU)2023/1542), Safety of toys - Migration of certain elements (EN71-3), Danish Regulation
2	Hexavalent chromium and its compounds	EU RoHS Directive, EU Packing and Packing Waste Directive (94/62/EC), Safety of toys - Migration of certain elements (EN71-3)
3	Lead and its compounds	EU REACH Regulation, EU RoHS Directive, EU Packing and Packing Waste Directive, EU Battery Regulation((EU)2023/1542), Safety of toys - Migration of certain elements (EN71-3), Proposition65 (California, USA)
4	Mercury and its compounds	EU REACH Regulation, EU RoHS Directive, EU Packing and Packing Waste Directive, EU Battery Regulation((EU)2023/1542), Safety of toys - Migration of certain elements (EN71-3)
5	Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs)	EU RoHS Directive
6	Tri-substituted organostannic compounds	EU REACH Regulation
	Bis tributyltin oxide (TBTO)	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
	Tributyltin compounds (TBT), Triphenyltin compounds (TPT), etc.	
7	Polychlorinated biphenyls (PCBs)	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance, POPs
8	Polychlorinated terphenyls#2 (PCTs)	EU REACH Regulation
9	Polychlorinated naphthalenes (Numbers of chlorine is 2 or more.)	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance, POPs
10	Short-chain chlorinated paraffins	POPs
11	Asbestos	EU REACH Regulation, Industrial Safety and Health Act (Japan)
12	Ozone depleting substances (Class 1)	Ozone Layer Protection Law, Montreal Protocol on Substances that Deplete the Ozone Layer, Clean Air Act (USA)
13	Ozone depleting substances (Class 2), Substitute Freon (HCFCs)	Ozone Layer Protection Law, Montreal Protocol on Substances that Deplete the Ozone Layer, Clean Air Act (USA)
14	Radioactive substances	Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (Japan)
15	PFOS (Perfluorooctanesulfonic acid) and its analogous compounds	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance, POPs
16	2-(2H-1,2,3-Benzotriazole-2-YL) - 4,6-di-tert-Butylphenol	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
17	Hexachlorobenzene	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance, EU REACH Regulation, POPs
18	Dimethyl fumarate (DMF)	EU REACH Regulation

No.	controlled applicable substances group	Laws and Regulations
19	Hexabromocyclododecane (HBCD or HBCDD)	Chemical Substance Control Law (Japan): Class I Specified Chemical Substance, 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	Safety of toys - Migration of certain elements (EN71-3)
25	Arsenic and its compounds	Safety of toys - Migration of certain elements (EN71-3)
26	Beryllium and its compounds#6	Industrial Safety and Health Act (Japan); Article 37 Permission for Manufacturing
27	Nickel and its compounds	EU REACH Regulation
28	Selenium and its compounds	Safety of toys - Migration of certain elements (EN71-3)
29	Un-specific brominated flame retardants	JEDEC JS709, IPC-4101 and IEC61249-2-21
30	Polyvinyl chlorides (PVCs) and its mixture, its copolymer	JS709, Korean law
31	Phthalate esters other than No.20 to 23 in this table	EU REACH Regulation
32	Di-substituted organostannic compounds	
	Dibutyltin compounds (DBT)	EU REACH Regulation/Restriction
	Dioctyltin compounds (DOT)	EU REACH Regulation/Restriction
	Other di-substituted organostannic compounds	
33	Cobalt and its compounds	Safety of toys - Migration of certain elements (EN71-3)
34	Specified azo compounds specified cracked amine (Azo dye, pigment)	EU REACH Regulation/Restriction
35	Formaldehyde	Act on Control of Household Products Containing Harmful Substances (Japan)
36	Benzene	Industrial Safety and Health Act (Japan); Article 57 Labeling
37	Fluorine-based greenhouse gases (HFC, PFC, SF6)	Act on Promotion of Global Warming Countermeasures (Japan)
38	Polycyclic aromatic hydrocarbon (PAHs)	EU REACH Regulation/Restriction
39	Perfluorooctanoic acid (PFOA) and its salts and esters	Domestic low in Norway, POPs, Chemical Substance Control Law (Japan): Class I Specified Chemical Substance, EU REACH Regulation
40	PFHxS and its salts and PFHxS related substances	Swiss decree, POPs, EU REACH Regulation
41	C9-C14 linear and/or branched perfluorocarboxylic acids (C9-C14 PFCAs), their salts and C9-C14 PFCAs-related substances	POPs, EU REACH Regulation
42	Decabromodiphenyl ether (DecaBDE)	TSCA (U.S.C. Title15/Chapter53/ § 2605), Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
43	2,4,6-tris(tert-butyl) phenol (2,4,6TTBP)	TSCA (U.S.C. Title15/Chapter53/ § 2605), Chemical Substance Control Law (Japan): Class I Specified

No.	controlled applicable substances group	Laws and Regulations
		Chemical Substance
44	Hexachlorobutadiene (HCBd)	TSCA (U.S.C. Title15/Chapter53/ § 2605), Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
45	Pentachlorothiophenol (PCTP)	TSCA (U.S.C. Title15/Chapter53/ § 2605), Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
46	Pentachlorophenol and its salts and esters	POPs, Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
47	Dechlorane Plus	POPs, Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
48	2-(2H-1,2,3-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol	POPs, Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
49	Methoxychlor	POPs, Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
50	Medium-chain chlorinated paraffins *	POPs
51	Long-chain perfluorocarboxylic acids (PFCAs) and their salts and related substances	POPs
52	REACH/restriction substances	EU REACH Regulation
53	REACH/authorization substances	EU REACH Regulation/Authorization
54	REACH/SVHC	EU REACH Regulation SVHC
55	chemSHERPA declarable substance	Declarable substance of chemSHERPA

* Limited to C14 to C17 and its contents of chlorine must be over 45% of its total weight.

Table 3.1 Chemical substances prohibited for use in Maxell (Level 1)

No.	controlled applicable substances group	controlled substance name	CAS No.	Control level (maximum acceptable value)
1	Cadmium and its compounds *1	Cadmium	7440-43-9	100 ppm Packing materials: 100 ppm*2
		Cadmium oxide	1306-19-0	
		Cadmium sulfide	1306-23-6	
		Cadmium chloride	10108-64-2	
		Cadmium sulfate	10124-36-4	
		Other cadmium compounds	—	
2	Hexavalent chromium and its compounds *1	Sodium dichromate	10588-01-9	1,000 ppm Packing materials: 100 ppm*2
		Sodium dichromate	7789-12-0	
		Chromium trioxide	1333-82-0	
		Calcium chromate	13765-19-0	
		Lead (II) chromate	7758-97-6	
		Potassium dichromate	7778-50-9	
		Potassium chromate	7789-00-6	
		Chromium (VI) oxide	1333-82-0	
		Barium chromate	10294-40-3	
		Sodium chromate	7775-11-3	
		Strontium chromate	7789-06-2	
		Zinc chromate	13530-65-9	
		Other hexavalent chromium compounds	—	
3	Lead and its compounds *1	Lead	7439-92-1	1,000 ppm Packing materials: 100 ppm*2
		Lead (II) carbonate	598-63-0	
		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 (II) carbonate basic	1319-46-6	
		Lead carbonate hydroxide	1344-36-1	
		Lead (II) sulfate	7446-14-2	
		Lead (II) phosphate	7446-27-7	
		Lead (II) chromate	7758-97-6	
		Lead (II) titanate	12060-00-3	
		Lead sulfate	15739-80-7	
		Lead acetate	301-04-2	
		Lead (II) acetate, trihydrate	6080-56-4	
		Lead phosphate	7446-27-7	
		Lead selenide	12069-00-0	
		Lead carbonate hydroxide	1344-36-1	
		Lead sulphate, tribasic	12202-17-4	
		Lead stearate	1072-35-1	
		Lead hydrogen arsenate	7784-40-9	
		Other lead compounds	—	
4	Mercury and its compounds *1	Mercuric chloride	7439-97-6	1,000 ppm 1 Packing materials:
		Mercury (II) chloride	10112-91-1	

No.	controlled applicable substances group	controlled substance name	CAS No.	Control level (maximum acceptable value)
		Mercury (II) oxide	7487-94-7	100 ppm*2
		Mercuric sulfate	21908-53-2	
		Mercuric nitrate	7783-35-9	
		Mercuric sulfide	10045-94-0	
		Other mercury compounds	1344-48-5	
		Mercuric chloride	—	
5	Polybrominated biphenyls (PBBs), Polybrominated diphenyl ethers (PBDEs)	Polybrominated biphenyls	59536-65-1	1,000 ppm
		Pentabromodiphenyl ether	32534-81-9	
		2-Bromobiphenyl	2052-07-5	
		3-Bromobiphenyl	2113-57-7	
		4-Bromobiphenyl	92-66-0	
		4-Bromophenyl Phenyl Ether	101-55-3	
		Decabromobiphenyl	13654-09-6	
		Decabromodiphenyl ether	1163-19-5	
		4,4'-Dibromobiphenyl	92-86-4	
		4,4'-Dibromodiphenyl ether	2050-47-7	
		Heptabromodiphenyl ether	68928-80-3	
		Hexabromobiphenyl	59080-40-9	
		Hexabromo-1,1.-biphenyl	36355-01-8	
		Hexabromobiphenyl ethers	36483-60-0	
		Nonabromobiphenyl ether	63936-56-1	
		Octabromobiphenyl	61288-13-9	
		Octabromodiphenyl ether	32536-52-0	
		Tetrabromobiphenyl	40088-45-7	
		Tetrabromobiphenyl ethers	40088-47-9	
		Tribromobiphenyl ether	49690-94-0	
		Hexabromobiphenyls mixture	67774-32-7	
6	Tributyltins (TBTs), Triphenyltins (TPTs) *3	Tributyltin chloride	1461-22-9	Intentional addition is banned, and its tin must be 1,000 ppm or less.
		Triphenyltin chloride	639-58-7	
		Bis (tri-n-butyltin) oxide	56-35-9	
		Triphenyl tin N, N'-dimethyldithiocarbamate	1803-12-9	
		Triphenyltin fluoride	379-52-2	
		Triphenyltin acetate	900-95-8	
		Triphenyltin hydroxide	76-87-9	
		Triphenyltin fatty acid salts (C=9-11)	47672-31-1	
		Triphenyltin chloroacetate	7094-94-2	
		Tributyltin methacrylate	2155-70-6	
		Bis (tributyltin) fumarate	6454-35-9	
		Bis (tributyltin) 2,3-dibromosuccinate	31732-71-5	
		Tributyltin fluoride	1983-10-4	
		Tributyltin acetate	56-36-0	
		Tributyltin laurate	3090-36-6	

No.	controlled applicable substances group	controlled substance name	CAS No.	Control level (maximum acceptable value)
		Tributyltin laurate	4782-29-0	
		Tributyltin sulfamate	6517-25-5	
		Bis (tributyltin) maleate	14275-57-1	
		Other tributyltin compounds	—	
		Other triphenyltin compounds	—	
7	Bis tributyltin oxide (TBTO)*3	Bis (tri-n-butyltin) oxide	56-35-9	Intentional addition is banned, and its tin must be 1,000 ppm or less.
8	Polychlorinated biphenyls (PCBs)	Polychlorinated biphenyls	1336-36-3	Intentional addition is banned.
		Chlorinated terphenyls	61788-33-8	
		Aroclor	12767-79-2	
		Chlorodiphenyl (aroclor 1260)	11096-82-5	
		Kanechlor 500	27323-18-8	
		Aroclor 1254	11097-69-1	
		Terphenyls	26140-60-3	
		Other polychlorinated biphenyls	—	
9	Polychlorinated terphenyls (PCTs)*3	Polychlorinated terphenyls	61788-33-8	Intentional addition is banned.
10	Polychloronaphthalenes (Numbers of chlorine is 2 or more.)	Polychlorinated naphthalenes	70776-03-3	Intentional addition is banned.
		Octachloronaphthalene	2234-13-1	
		Tetrachloronaphthalene	1335-88-2	
		Hexachloronaphthalene	1335-87-1	
		Other polychlorinated naphthalenes	-	
11	Short-chain chlorinated paraffins *3	Chlorinated paraffines (C10-13)	85535-84-8	Intentional addition is banned.
		Other short-chain chlorinated paraffines	—	
12	Asbestos*3	Amosite	12172-73-5	Intentional addition is banned and must be 1,000 ppm or less.
		Crocidolite	12001-28-4	
		Chrysotile	12001-29-5	
		Actinolite	77536-66-4	
		Anthophyllite	77536-67-5	
		Tremolite	77536-68-6	
		Other asbestos	1332-21-4	
13	Ozone depleting substances (Class 1)	Refer to "Appendix 1. Ozone depleting substances".	Same as left.	Intentional addition is banned.
14	Ozone depleting substances (Class 2), Substitute Freon (HCFCs)*4	Refer to "Appendix 1. Ozone depleting substances".	Same as left.	Intentional addition is banned.
15	Radioactive substances*4	Uranium (U)	7440-61-1	Intentional addition is banned.
		Plutonium (Pu)	—	
		Thorium (Th)	—	
		Radon (Rn)	—	
		Americium (Am)	—	

No.	controlled applicable substances group	controlled substance name	CAS No.	Control level (maximum acceptable value)
		Cesium (Cs)	7440-46-2	
		Strontium (Sr)	7440-24-6	
		Other radioactive substance	—	
16	PFOS (Perfluorooctanesulfonic acid) and its analogous compounds	Refer to "Appendix 2. PFOS/ PFOS relative compounds".	Same as left.	Intentional addition is banned.
17	2-(2H-1,2,3-Benzotriazole-2-YL) - 4,6-di-tert-Butylphenol	2- (2H-1,2,3-Benzotriazole-2-YL) (UV320)	3846-71-7	Intentional addition is banned.
18	Hexachlorobenzene	Hexachlorobenzene	118-74-1	Intentional addition is banned.
19	Dimethyl fumarate (DMF)*3	Dimethyl fumarate (DMF)	624-49-7	0.1 ppm or less
20	Hexabromocyclododecane (HBCD or HBCDD)	Refer to "Appendix 5. List of Hexabromocyclododecane (HBCD or HBCDD)".	Same as left.	Intentional addition is banned.
21	Bis (2-ethylhexyl) phthalate (DEHP)	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7	1,000 ppm
22	Benzyl butyl phthalate (BBP)	Benzyl butyl phthalate (BBP)	85-68-7	1,000 ppm
23	Dibutyl phthalate (DBP)	Dibutyl phthalate (DBP)	84-74-2	1,000 ppm
24	Diisobutyl phthalate (DIBP)	Diisobutyl phthalate (DIBP)	84-69-5	1,000 ppm
25	Perfluorooctanoic acid (PFOA) and its salts and esters	Refer to "Appendix 6. List of Perfluorooctanoic acid (PFOA)".	Same as left.	25 ppb
26	PFHxS and its salts and PFHxS related substances	PFHxS and its salts and PFHxS related substances	355-46-4 423-50-7 68259-08-5	25 ppb Related substances:1,000 ppb
27	C9-C14 PFCAs, their salts and C9-C14 PFCAs-related substances	C9-C14 linear and/or branched perfluorocarboxylic acids (C9-C14 PFCAs), their salts and C9-C14 PFCAs-related substances	375-95-1 335-76-2 etc.	25 ppb Related substances:260 ppb
28	Decabromodiphenyl ether (DecaBDE)	Decabromodiphenyl ether (DecaBDE)	1163-19-5	Intentional addition is banned.
29	2,4,6-tris (tert-butyl) phenol (2,4,6TTBP)	2,4,6-tris (tert-butyl) phenol (2,4,6TTBP)	732-26-3	Intentional addition is banned.
30	Hexachlorobutadiene (HCBD)	Hexachlorobutadiene (HCBD)	87-68-3	Intentional addition is banned.
31	Pentachlorothiophenol (PCTP)	Pentachlorothiophenol (PCTP)	133-49-3	1wt%
32	Pentachlorophenol and its salts and esters	Pentachlorophenol and its salts and esters (PCP)	87-86-5 131-52-2 27735-64-4 3772-94-9	Intentional addition is banned.
33	Dechlorane Plus	Dechlorane Plus (DP)	13560-89-9 135821-03-3	Intentional addition is banned.

No.	controlled applicable substances group	controlled substance name	CAS No.	Control level (maximum acceptable value)
			135821-74-8	
34	2- (2H-1,2,3-Benzotriazol-2-yl) -4,6-di-tert-pentylphenol	2- (2H-1,2,3-Benzotriazol-2-yl) -4,6-di-tert-pentylphenol (UV-328)	25973-55-1	Intentional addition is banned.
35	Methoxychlor	Methoxychlor	72-43-5	Intentional addition is banned.
36	Medium-chain chlorinated paraffins*5	Medium-chain chlorinated paraffins (MCCP)	85535-85-9	Intentional addition is banned.
37	Long-chain perfluorocarboxylic acids, their salts and related compounds	Long-chain perfluorocarboxylic acids (LC-PFCA), their salts and related compounds	2058-94-8 375-95-1 376-06-7 etc.	Intentional addition is banned.
38	REACH/restriction substances	Refer to "REACH regulation SVHC list" and Annex XIV.	Same as left.	

*1: A metal contains its alloy.

*2: Total amount of four materials in packing materials must be less than 100 ppm.

*3: REACH regulated substance which judged as full-scale regulation for its use or handling.

*4: Regard as "Level 1: prohibited substances" in Maxell.

*5: Limited to C14 to C17 and its contents of chlorine must be 45% of its total weight.

Table 3.2 Substances which actual usage status and control are required. (Level 2)

No.	Controlled applicable substances group	Controlled substance name	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 arsenite	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
		Berylore	1302-52-9
		Other beryllium compounds	—
4	Nickel and its compounds *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

No.	Controlled applicable substances group	Controlled substance name	CAS No.
		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
		Pentabromophenol	608-71-9
		2,3-Dibromo-1-propanol	96-13-9
		Vinyl bromide	593-60-2
		Pentabromotoluene	87-83-2
		Tetrabromophthalic 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	Diheptyl nonylundecyl phthalate (DHNUP)	68515-42-4
		1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters (DIHP)	71888-89-6
		Bis(2-methoxyethyl) phthalate	117-82-8
		Diisononyl phthalate (DINP)	28553-12-0
		Di-n-octyl phthalate (DNOP)	117-84-0
		Diisodecyl phthalate (DIDP)	26761-40-0
		Other Phthalates	—
9	Di-substituted organostannic compound	Dibutyltin compounds (DBT)	—
		Diocetyl tin compounds (DOT)	—
		Other di-substituted organostannic compounds	—
10	Cobalt and its compounds	Cobalt	7440-48-4
		Cobalt (II) chloride	7646-79-9
		Cobalt (II) sulfate	10124-43-3
		Cobalt (II) nitrate	10141-05-6
		Carbonic acid cobalt (II)	513-79-1
		Cobalt (II) acetate	71-48-7
11	Specified azo compounds, Specified cracked Amine (Azo dye, pigment)	Refer to "Appendix 4. List of aromatic amines".	Same as left.
12	Formaldehyde	Formaldehyde	50-00-0
13	Benzene	Benzene	71-43-2
14	Fluorine based greenhouse gases (HFC, PFC, SF ₆)	HFC	—
		PFC	—

No.	Controlled applicable substances group	Controlled substance name	CAS No.
		SF6	—
15	Polycyclic aromatic hydrocarbon (PAHs)	Refer to “REACH regulation SVHC list”.	Same as left.
16	REACH/authorization substances	Refer to “REACH regulation SVHC list” and Annex XIV.	Same as left.
17	RECAH/SVHC	Refer to “REACH regulation SVHC list”.	Same as left.
18	chemSHERPA declarable substances*4	Declarable substances regulated by Joint Article Management Promotion-consortium.	—

*1: A metal contains its alloy.

*2: Nickel is applied for the use which has the possibility to touch skins for long periods of time, for example an exterior of portable electronic equipment.

*3: Applied for packing materials use only.

*4: Declarable substances regulated by Joint Article Management Promotion-consortium. Including substances applying following laws and industry standards.

1. Chemical Substance Control Law (Japan): Class I Specified Chemical Substance
2. TSCA (U.S.C. Title15/Chapter53/ § 2605)
3. ELV directive
4. RoHS directive
5. Annex I
6. REACH certified candidate substances (SVHC) and Annex X IV
7. REACH Annex XVII (restriction substances)
8. MDR
9. GADSL
10. IEC62474

For details, refer to the following document and list.

"Explanation of chemSHERPA declarable substances", "chemSHERPA managed substance list" (latest version)

URL : <https://chemsherpa.net/chemSHERPA/tool/>

Appendix List

Appendix 1. Ozone depleting substances

Appendix 2. PFOS/PFOS relative compounds

Appendix 3. REACH restricted substance list

Appendix 4. List of aromatic amines

Appendix 5. List of Hexabromocyclododecane (HBCD or HBCDD)

Appendix 6. List of Perfluorooctanoic acid (PFOA)

For RoHS Directive/Exemptions list, see below.

ANNEX III : <https://EU directive.net/rohstekiyoujogai/rohs2annex3.html>

ANNEX IV : <https://EU directive.net/rohstekiyoujogai/rohs2annex4.html>

REACH regulation SVHC list: <https://echa.EU ropa.EU /candidate-list-table>

Update History

Date	Contents
July 1, 2008	8 substances of customer requirement were added to Table 3.3. PFOS (Perfluorooctanesulfonic acid), TBBP-A (Tetra Bromo Bisphenol-A), PAHs (Polycyclic Aromatic Hydrocarbons), Ethylene glycol Methyl ester, Ethyl ester and those derivative, Polyvinyl chloride and its monomer, Beryllium and its compounds, Dioxin halide, and Furan were added.
January 1, 2009	(1) 15 substances of REACH Regulation Candidate List were added to Table 3.1 and 3.2. Sodium dichromate dihydrate, Lead hydrogen arsenate, Bis(tributyltin)oxide, Alkanes C10-13 chloro (Short chain chlorinated paraffins), Anthracene, 4,4'-Diaminodiphenylmethane, Cobalt dichloride, Diarsenic pentoxide, Diarsenic dichromate, Musk xylene, Bis (2-ethyl hexyl phthalate, hexabromocyclododecane, Benzyl butyl phthalate, Triethyl arsenate, Dibutyl phthalate (2) 19 substances of Customer requirement were added to Table 3.3. 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), Perfluoro octane 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)
July 1, 2010	(1) 14 substances and Acrylamide of REACH Regulation Candidate List were added to Table 3.1 and 3.2. 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, distillation, lights, Anthracene oil, anthracene paste, anthracene fraction, Anthracene oil anthracene-low, Anthracene oil, anthracene paste, Coal tar pitch, high temperature, Aluminosilicate, refractory ceramic fibers, Tris(2-chlororthyl)phosphate, Zirconia aluminosilicate, refractory ceramic fibers, 2,4-Dinitrotoluene, Acrylamide, (2) 8 substances of Customer requirement were added to Table 3.3. Beryllium oxide, Brominated flame retardants, Chlorinated flame retardants, Musk fragrance substance, Volatile organic compound (VOC), Bisphenol A, Triclosan, Surfactants (3) Table 2 was reviewed. (4) JEITA Class No. was deleted from Table 2,3-1,3-2 and 3-3.
September 1, 2010	(1) 8 substances of REACH Regulation Candidate List were added to Table 3.1 and 3.2. Trichloroethylene, Boric acid, Disodium tetraborate, anhydrous, Tetraboron disodium heptoxide, hydrate, Sodium chromate, Potassium chromate, Ammonium dichromate, Potassium dichromate (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). (3) 4,4'-Diaminodiphenylmethane, Dibutyl phthalate, Musk xylene, Bis (2-ethyl hexyl) phthalate, Hexabromocyclododecane, Benzyl butyl phthalate
January 14, 2011	(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 (2) Chromic acid, Oligomers of chromic acid and dichromic acid, Dichromic acid.
September 20,	(1) Revision of controlled substance groups in Table 2, Table 3.1 and Table 3.2.

Date	Contents
2013	(2) Correction of related body text according to the above changes.
October 1, 2015	(1) Changed Table 2: The addition of No.19-No.23 and No 38-No40. (2) Changed Table3.1: The addition of No.20. (3) Changed Table3.2: The addition of No.1-No4 and No 19-21.
January 1, 2019	(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
July 22, 2019	(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.
January 1, 2020	(1) (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".
July 4, 2020	Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA has been changed to 25ppb or less in the EU REACH regulation, so Annex 3.1 (Level 1) was changed accordingly.
August 2, 2022	<ul style="list-style-type: none"> We have collected and removed that unnecessary or misleading expression. Four PBT substances have been banned by TSCA in the United States, so they have been added accordingly (Level 1). The PIP (3:1) proposed at the same time will be added at the time of enforcement by extending the start deadline. PFHxS and its salts adopted in the POPs Convention and REACH Restricted Substances, PFHxS-related substances, and C9-C14 Perfluorocarboxylic acids (PFCAs) have been added to the prohibited substances due to legislation (Level 1).
December 7, 2023	<ul style="list-style-type: none"> Amendments and additions to applicable laws and regulations (Table 2). Three substances designated as substances to be eliminated by the POPs Convention: Pentachlorophenol and its salts and esters, Dechlorane Plus, and 2-(2H-1,2,3-Benzotriazol-2-yl)-4,6-di-tert-pentylphenol. Added to Level 1 Prohibited Substances (Table 3.1). "REACH restricted substances" cannot be manufactured or used unless they meet the conditions, so they are moved to Level 1 (Table 3.1). Correction of errors in CAS numbers, etc. in the controlled substance level 2 cobalt and its compounds section (Table 3.2).
May 29 2025	(1) Corrected misspellings. (2) Moved the sentence about "Homogeneous material" to "3. Terms and definitions" from "*1 Level 1(prohibited substances)" in "4.1. Controlled

Date	Contents
	<p>substances".</p> <p>(3) Added "a survey methods in chapter 4.2 and the contents of it." to to "**3 Level 3 (prohibited or controlled substances set by customer demand)" in "4.1. Controlled substances".</p> <p>(4) Changed the value "100 %" to "110 %" of "④ Classification of survey numerical values" in chapter 4.2 by the rule of chemSHERPA.</p> <p>(5) Changed the sentences of "4.4. Priority standards". Renewed the name of law, "EU Battery Directive (2006/66/EC)" to "EU Battery Regulation((EU)2023/1542)".</p> <p>(6) Added "Methoxychlor", "Medium-chain chlorinated paraffins" and "Long-chain perfluorocarboxylic acids, their salts and related compounds" to the prohibited substances.</p>