

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

The 9th Edition

Hitachi 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 Hitachi 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.

2. Scope

This control standard shall apply to products, parts, materials, packing materials and auxiliary materials to be purchased from suppliers. 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 and Attached list 1.
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 or Attached list 2).	See attached Table 2 and Attached list 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) 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.

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.)

(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 October 1, 2015.

As for eighth edition, an application is possible until September 30, 2015 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 (2002/95/EC).
 - 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.

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

7. Analytic Processes

Follow the analysis method showed on table 1, or use the measurement procedure conforming to the Hitachi Group's "Guidelines for Analysis of RoHS Directive-compliant of Cadmium, Lead, Mercury, Hexavalent Chromium and Bromine-based Flame Retardants (PBBS and PBDEs)"

(http://www.hiweb.hitachi.co.jp/corporate_env/key/chemical/guideline_101112rev0_2_e.pdf).

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 ninth edition from the eighth edition are as follows:

5.1 Survey of inclusion of environmental controlled chemical substances

We delete "the input to A Gree' Net".

**Control Standards for Handling Chemical Substances in
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**The 9th Edition
Revision Date: September, 2015**

Issued by: Hitachi 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)

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. For details about other utility, control values, and relevant regulations that fall under this restriction, see Attached list 1 (for the home page where the Attached list is published, see the upper part of page 13).

Table 2 shows each substance or substance group that belongs to level 2 (controlled substances). For details about relevant laws, see attachment 2 (for the home page where the Attached list is published, see the upper part of page 13).

For numbers 1 through 5, any items corresponding to those excluded from application according to the RoHS orders (EU) shown in Attached list 3-1 or Attached list 3-2 (for the home page where the Attached list is published, see the upper part of page 13) 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 list 6, and for details about REACH/permitted substances or SVHC substances, see Attached list 7 (for the home page where the Attached list is published, see the upper part of page 13).

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 (TBTO) 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≥3)	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 5.	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
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 RoHS Directive (from July, 2019)
21	Benzyl butyl phthalate (BBP)	EU RoHS Directive (from July, 2019)
22	Dibutyl phthalate (DBP)	EU RoHS Directive (from July, 2019)
23	Diisobutyl phthalate (DIBP)	EU RoHS Directive (from July, 2019)
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
31	Phthalate 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
40	Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	Domestic law in Canada
41	REACH/restriction substances (For applicable substances, or for details, see Attached list 6.)	EU REACH Regulation/Restriction

No.	Laws and Regulations	Environmental Controlled Substances
42	REACH/authorization substances (For applicable substances, see Attached list 7.)	EU REACH Regulation/Authorization
43	RECAH/SVHC (For applicable substances, see Attached list 7.)	EU REACH Regulation/SVHC
44	JAMP declarable substances#9	JAMP 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 sulfate 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≥3)	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 list 4	See Attached list 4	Intentional use is prohibited
14	Ozone depleting substances (Class 2) Substitute Freon (HCFCs)	See Attached list 4	See Attached list 4	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 5.	See Attached list 5	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 9.	See Attached list 9	

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	Bis (2-ethylhexyl) phthalate (DEHP)	Bis (2-ethylhexyl) phthalate (DEHP)	117-81-7
2	Benzyl butyl phthalate (BBP)	Benzyl butyl phthalate (BBP)	85-68-7
3	Dibutyl phthalate (DBP)	Dibutyl phthalate (DBP)	84-74-2
4	Diisobutyl phthalate (DIBP)	Diisobutyl phthalate (DIBP)	84-69-5
5	Antimony and its compounds *1	Antimony Stibine (Antimony hydride) Antimony pentoxide Antimony pentafluoride Antimony trioxide Antimony trichloride Sodium antimonite Other antimony compounds	7440-36-0 7803-52-3 1314-60-9 7783-70-2 1309-64-4 10025-91-9 15432-85-6 —
6	Arsenic and its compounds *1	Arsenic (As) Gallium arsenide Arsenic pentoxide Arsenic trioxide Calcium arsenate Calcium arsenite Potassium arsenite Potassium arsenate Lead arsenate Triethyl arsenate Other arsenic compounds	7440-38-2 1303-00-0 1303-28-2 1327-53-3 7778-44-1 27152-57-4 10124-50-2 7784-41-0 3687-31-8 15606-95-8 —
7	Beryllium and its compounds *1	Beryllium Beryllium oxide Beryllium-Aluminum Alloy Beryllium chloride Beryllium fluoride Beryllium hydroxide Beryllium phosphate Beryllium sulfate Beryllium sulfate tetrahydrate Beryl ore Other beryllium compounds	7440-41-7 1304-56-9 12770-50-2 7787-47-5 7787-49-7 13327-32-7 13598-15-7 13510-49-1 7787-56-6 1302-52-9 —

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

No.	Environmental Controlled Substances	Name of Substance	CAS No.
8	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	—
9	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	—
10	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	—
11	Polyvinyl chloride (PVC)*3	Polyvinyl chloride (CH ₂ -CHCL) _n	9002-86-2
12	Specified Phthalates	Diheptylnonylundecyl phthalate (DHNUP)	68515-42-4
		1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	71888-89-6
		Diisooheptyl phthalate (DIHP)	71888-89-6
		1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich	117-82-8
		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.
13	Di-substituted organostannic compounds (DBT, DOT, etc.)	Dibutyltin compounds (DBT) Dioctyltin compounds (DOT) Other di-substituted organostannic compounds	- - -
14	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
15	Specified azo compounds Specified cracked Amine (Azo dye, pigment)	See Attached list 8	See Attached list 8
16	Formaldehyde	Formaldehyde	50-00-0
17	Benzene	Benzene	71-43-2
18	Fluorine-based greenhouse gases	HFC PFC SF6	- - -
19	Polycyclic-aromatic hydrocarbons (PAHs) corresponding to REACH/restriction substance	See Attached list 6	See Attached list 6
20	Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA	See Attached list 10	See Attached list 10
21	Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	68921-45-9
22	REACH/restriction substances (For applicable substances, or for details, see Attached list 6.)	See Attached list 6	See Attached list 6

No.	Environmental Controlled Substances	Name of Substance	CAS No.
23	REACH/authorization substances	See Attached list 7	See Attached list 7
24	RECAH/SVHC	See Attached list 7	See Attached list 7
25	JAMP declarable substances *4	Declarable substances regulated by the Joint Article Management Promotion consortium (JAMP).	-

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

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

1. Japan Chemical Examination Law/Type 1 specified chemical substances
2. Japan Industrial Safety and Health Law (substances whose manufacture is prohibited)
3. Poisonous and Deleterious Substances Control Law (specific toxic substances)
4. RoHS directive
5. ELV directive
6. GLP (Annex VI Table3.1/CMR-Cat 1a and 1b as well as Table3.2/CMR-Cat 1 and 2)
7. REACH Annex XVII (restriction substances)
8. REACH authorization substance candidates (SVHC)
9. POPs regulation Annex I
10. ESIS PBT (parts that apply to the PBT evaluation criteria)
11. GADSL
12. JIG

For details, see the following document and list:

JAMP declarable substance handbook and JAMP declarable substance reference list(Latest version)

Reference : <http://www.jamp-info.com/list>

Attachment list

Attached list 1: List of details on utility/control values/reference laws relating to each level 1 (Prohibited) substance group

Attached list 2: List of details on utility/control values/reference laws relating to each level 2 (Managed) substance group

Attached list 3-1: RoHS directive/list of exemptions (Annex 3)

Attached list 3-2: RoHS directive/list of exemptions (Annex 4)

Attached list 4: Ozone-layer-depleting substances list

Attached list 5: PFOS and its analogous compounds list

Attached list 6: REACH/restriction substance list

Attached list 7: REACH/authorization substance/SVHC list

Attached list 8: Specific amine list

Attached list 9: Hexabromocyclododecane (HBCD or HBCDD) list

Attached list 10: Perfluorooctanoic acid (PFOA) and its salts and its esters list

(Home page for Attached lists:http://www.hitachi.co.jp/environment/library/pdf/green_annex_en.pdf)

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 Table3.1 : The addition of No.20 (3)The change of Table3.2 : The addition of No.1–No4 and No 19–21</p>