

**No. MS070701G1**  
**Global Common Standard**

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

**(for Suppliers)**

**The 7<sup>th</sup> Edition**  
**Revision Date: July 1, 2008**

**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 its group of companies (hereinafter 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. For the purpose of this control standard, unless otherwise specified, "impurities" shall refer to substances included at levels of no more than 0.1 wt% (1,000ppm). 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),	See attached Table 2

	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).	
Level 2 *2	Controlled substances whose intentional use is not limited under laws, but whose actual status of usage should be monitored, 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 and customer requirement concerning Maxell products. The final decision is left Maxell to its discretion.	See attached Table 2 and 3.3.

\*1: Level 1 (prohibited substances)

- (1) Controlled substances are regulated in terms of intentional addition and numerical values.
- (2) 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 and the use of that substance is prohibited.
- (3) It is considered an inclusion when a chemical substance is added over the controlled value in a homogeneous material, and it's use is prohibited. (Mainly impurities)
- (4) A homogeneous material is the smallest unit that composes a part, and cannot be mechanically divided further.

\*2: Level 2 (controlled substances)

- (1) The controlled substance is measured by the quantity included in one part. The controlled value is 1000ppm. If 1000ppm or more is contained in the part, it is necessary to manage that quantity.
- (2) If the inclusion is clearly recognized to be 1000ppm or less, a report is necessary. The "controlled value" and the "permission value" are the same. Both are shown by the maximum value.

\*3: Level 3 (prohibited substances and controlled substances set by Maxell)

- (1) Level 3 shows the controlled values regulated by local laws that are more severe than Table 3.1 and 3.2 and customer demand concerning Maxell products, and Table 3.3 shows about chemical substances other than those in Table 3.1 and 3.2.

#### **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:

For Level 1 substances, examinations shall be conducted based on each denominator specified in Article 4, clause 3. On the other hand, examinations for level 2 substances shall be conducted based on purchased units, or the arbitrary levels of units of materials, parts, partially fabricated products, units or finished products. Level 3 substances shall be handled in a similar manner to Level 1 or 2, depending on the contents of the management.

(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 table below summarizes 2 to 5 above.

	Units of survey	Unit and classification of the examination values	Control level of the examination values	
			Intentionally added	Unintentionally added
Level 1	Units of homogeneous materials (details in materials (details in Article 4, clause 3)	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	Units of purchase or each hierarchy dividing the items into arbitrary levels.	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.
Level 3	To be handled similarly to Levels 1 and 2 according to the management details.	Level 3 shall be handled similarly to Levels 1 and 2 according to the management details.	To be obtained regardless of the values.	To be handled similarly to Levels 1 and 2 according to the management details.

#### 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	Single- or multi-layer structure of paint, printing, plating and other materials	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 Standard values of environmental controlled chemical substances

The standard control level for chemical substances to be prohibited as set forth in this control standard shall be 1,000 ppm. Provided, however, the control values regulated by the legal regulations and the control values required by customers precede the standard values (See attached Table 4).

#### 4.5 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 July 1, 2008.

As for fourth edition, an application is possible until December 31, 2008 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 register themselves on New Green Procurement System "A Gree' Net" of the Hitachi Group and 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. The data shall be inputted into A Gree' Net System in principle. If it is impossible, 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://greenweb.hitachi.co.jp/pdf/RoHS.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 seventh edition from the sixth edition are as follows:

- (1) Item 6.1(2) The parts and materials shown below can be made into the object of exclusion based on RoHS Directive (2002/95/EC).

The Deca-BDE (Deca- Bromo Diphenyl Ether) used for the plastics material was deleted from the exemption of RoHS Directive.

- (2) Table 3.3. Control values regulated by legal regulations and customer requirements(Level 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.

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**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
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, regulations and control levels for environmental controlled chemical substances**

No.	Laws and Regulations	Environmental Controlled Substances	Control Level	
			1	2
1	*The Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances (Japan) Specified chemical substances including with POPs (No.11)	PCB' s, Bis(tri-butyl tin)oxide, Specified tri-butyl tin compounds, Specified tri-phenyl tin compounds	V	
2	*Poisonous and Deleterious Substances Control Law of Japan: Specified poisons	Tetra-alkyl lead	V	
3	*Air Pollution Control Law of Japan: Specified particulate	Asbestos	V	
4	*Montreal Act: Ozone-depleting substances	Class-I : Fron' s(CFC) and Specified Halon' s(BFC and HBFC) Class-II : CFCs substitute(HCFC and HBFC)	V	
5	*Industrial Safety and Health Law of Japan Banned substances	Grunerite Asbestos, Crocidolite Asbestos,	V	
6	*EU Directive/RoHS: Restriction of the use of certain Hazardous Substances in electrical and electronic equipment	Cadmium and its compounds, Mercury and its compounds, Hexavalent chromium and its compounds, Lead and its compounds, PBB' s, PBDE' s	V	
7	*Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management *Pollutant Release and Transfer Register (PRTR) Specified chemical substances PRTR/Controlled chemical substances	Asbestos, Cadmium and its compounds, Hexavalent Chromium and its compounds	V	
		Nickel and its compounds, Arsenic and its inorganic compounds, Beryllium and its compounds, Excepted for the list No.1 to the list No.18		V
8	Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material, and Reactors Radioactive material	Nuclear Source Material, Nuclear Fuel Material, Uranium, Plutonium	V	

No.	Laws and Regulations	Environmental Controlled Substances	Control Level	
			1	2
9	*EU Directive:EU/76/769/EEC (CMRs) Carcinogenic, Mutagenic and Toxic to Reproduction Substances	Specified Azo compounds (Specified cracked amines), RoHS substances,	V	
10	*EU Directive: EU94/62/EC	Cadmium, Hexavalent chromium, Lead, Mercury,	V	
11	*Stockholm Act : Presistent Organic Pollutions (POPs)	PCB' s	V	
12	*EU Regulation concerning the Safety of the toys (EN71-3) Substances to the exclusion of EU Regulation EN71-3 may be applied right side controlled levels	Cadmium, Hexavalent-chromium, Lead, Mercury	V	
		Selenium, Antimony, Arsenic		V
13	*Soil Contamination Countermeasures Law of Japan to the exclusion from the List No. 1 to the List No. 12	Selenium and its compounds		V
14	*Water Pollution Prevention Law of Japan to the exclusion from the List No.1 to the List No. 12	Selenium and its compounds		V
15	*EU Directive: EU2005/84/EC	Specified Phthalate (5 chemicals)		V
16	*Environmental Controlled Substances (9 substances and its compounds) exempted above No. 1-No. 11substances	PVC, Specified phthalates, Bromic noncombustibles(exclusion PBB and PBDE), Bismuth and its compounds Antimony and its compounds		V
17	REACH Regulation SVHC Candidate List 15 substances	Anthracene, 4,4' -Diaminodiphenylmethane, Dibutyl phthalate (DPB), Cobalt dichloride, Diarsenic pentaoxide, Diarsenic trioxide, Sodium dichromate, 5-tert-butyl-2,4,6-trinitro-m xylene, Bis(2-ethyl(hexyl)phthalate) (DEHP), Hexabromocyclo-dodecane (HBCDD), Alkalines, C10-13, chloro(Short Chain Chlorinated Paraffins), Bis(tributyltin)oxide, Lead hydrogen arsenate, Benzyl butyl phthalate(BBP), Triethyl arsenate	V	V

**Table 3.1 Environmental controlled chemical substances of Level 1**

No.	J E I T A Classification	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
1	A05	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 addition *3 The products and parts shown in Table 4 follow the controlled value indicated there.
2	A07	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 Intentional addition *3 The products and parts shown in Table 4 follow the controlled value indicated there.
3	A09	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 hydroxidcarbonate Lead acetate	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 1344-36-1 301-04-2	1000ppm, 100ppm(Package)*2, 300ppm(PVC Cable)*4 or Intentional addition *3 The products and parts shown in Table 4 follow the controlled value indicated there.

\*1 The metal contains the alloy. \*2 The chemical substances contained in the package are less than 100ppm on four metals total. \*3 Impurity is applied to 1000ppm or more. Even if a small amount of the chemical substance was added (1mg or 1ppm), it is considered to be an inclusion. \*4 This applies to laws of the state of California and customer demand.

No.	J E I T A Classifica tion	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
3	A09	Lead and its compounds *1	Lead(II) acetate, trihydrate Lead phosphate Lead selenide Lead sulphate, tribasic Lead stearate Lead hydrogen arsenate Other lead compounds	6080-56-4 7446-27-7 12069-00-0 12202-17-4 1072-35-1 7784-40-9 —	1000ppm, 100ppm(Package) *2, 300ppm(PVC Cable) *4 or Intentional addition *3
4	A10	Mercury and its compounds *1	Mercury Mercury(II) chloride Mercury(II) oxide Mercuric chloride Mercuric sulfate Mercuric nitrate Mercuric sulfide Other mercury compounds	7439-97-6 7487-94-7 21908-53-2 33631-63-9 7783-35-9 10045-94-0 1344-48-5 —	1000ppm, 100ppm(Package) *2 or Intentional addition *3 The products and parts shown in Table 4 follow the controlled value indicated there.
5	A18	Bis tributyltin oxide (TBT0)	Bis (tri-n-butyltin) oxide	56-35-9	Intentional addition
6	A17	Tributyltins (TBT) Triphenyltins (TPT)	Tributyltin chloride Triphenyltin chloride Bis(tri-n-butyltin)oxide Triphenyltin 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	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	Intentional addition

\*1 The metal contains the alloy.

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

\*3 Impurity is applied to 1000ppm or more. Even if a small amount of the chemical substance was added (1mg or 1ppm), it is considered to be an inclusion.

\*4 This applies to laws of the state of California and customer demand.

No.	J E I T A Classification	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
6	A17	Tributyltins (TBT) Triphenyltins (TPT)	Bis(tributyltin) maleate Other tributyltin compounds Other triphenyltin compounds	14275-57-1 — —	Intentional addition
7 8	B02 B03	Polybrominated Biphenyls (PBBs) Polybrominated Diphenyl Ethers (PBDEs)	Polybrominated Biphenyls 2-Bromobiphenyl 3-Bromobiphenyl 4-Bromobiphenyl Bromobiphenylethers Decabromobiphenyl Decabromobiphenylethers Dibromobiphenyl Dibromobiphenylethers Heptabromobiphenylether Hexabromobiphenyl Hexabromo-1, 1. -biphenyl Hexabromobiphenylethers Nonabromobiphenylether Octabromobiphenyl Tetrabromobiphenyl Tetrabromobiphenylethers Tribromobiphenylether Pentabromodiphenylether Octabromodiphenylether Hexabromobiphenyls mixture	59536-65-1 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 40088-45-7 40088-47-9 49690-94-0 32534-81-9 32536-52-0 67774-32-7	1000ppm or Intentional addition
9	B05	Polychlorinated Biphenyls (PCBs)	Polychlorinated biphenyls Polychlorinated 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 addition

No.	J E I T A Classification	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
10	B06	Polychloronaphthalenes (Cl <sub>n</sub> : n ≥ 3)	Octachloronaphthalene Tetrachloronaphthalene Hexachloronaphthalene Polychlorinated Naphthalenes (Cl ≥ 3) Other polychlorinated Naphthalenes	2234-13-1 1335-88-2 1335-87-1 70776-03-3 —	Intentional addition
11	B09	Short-chain Chlorinated Paraffins	Chlorinated paraffines (C10-13) Other short-chain chlorinated paraffines	85535-84-8 —	1000ppm
12	C01	Asbestos	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 addition
13	C02	Specified Azo Compounds Specified Cracked Amine	2, 4, 5-Trimethylaniline 4-Methoxy-m-phenyldiamine 2, 4-Toluene diamine 2-Naphthylamine 2-Methyl-5-methylaniline 3, 3'-Dichlorobenzidine 3, 3'-Dimethylbenzidine 3, 3'-Dichloro-4, 4'-diaminodiphenylmethane 4, 4'-Methylenedi-o-toluidine 4, 4'-Diaminodiphenlether 4, 4'-Thiodianiline 4, 4'-Methylenedianiline 4-Aminodiphenyl 4-Chloro-o-toluidine 4-Nitro-o-toluidine 5-nitro-o-toluidine o-Anisidine o-Aminoazotoluene o-Toluidine p-Chloroaniline o-Dianisidine and its salts	137-17-7 615-05-4 95-80-7 91-59-8 120-71-8 91-94-1 119-93-7 101-14-4 838-88-0 101-80-4 139-65-1 101-77-9 92-67-1 95-69-2 99-52-5 99-55-8 90-04-0 97-56-3 95-53-4 106-47-8 119-90-4	Intentional addition

No.	J E I T A Classification	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
13	C02	Specified Azo Compounds Specified Cracked Amine	Aniline Salts of 2-Naphtylamine Salts of 4-Aminodiphenyl Benzidine (4, 4-Diaminobiphenyl) Derivatives of Benzidine N, N' -Di-tolyl-p-phenylene diamine N, N' -Di-xylyl-p-phenylene diamine N-Tolyl-N' -xylyl-p-phenylene diamine 4-amino azobenzene	62-53-3 — — 92-87-5 — 620-91-7 60-09-03	Intentional addition
14	C04	Ozone Depleting Substances (Class-1)	1, 1, 1-Trichloroethane (CH <sub>3</sub> CCl <sub>3</sub> ) Carbon tetrachloride (CCL <sub>4</sub> ) Bromo chloro methane (ClCH <sub>2</sub> Br) Bromomethane (CH <sub>3</sub> Br) Trichlorofluoromethane Dichlorodifluoromethane (CFC12) Chlorotrifluoromethane (CFC13) Pentachlorofluoroethane (CFC 111) Tetrachlorodifluoroethane (CFC 112) Trichlorotrifluoroethane (CFC 113) 1, 1, 2 Trichloro-1, 2, 2 trifluoroethane Dichlorotetrafluoroethane (CFC 114) Monochloropentafluoroethane (CFC 115) Heptachlorofluoropropane (CFC 211) Hexachlorodifluoropropane (CFC 212) Pentachlorotrifluoropropane (CFC 213) Tetrachlorotetrafluoropropane (CFC 214) 1, 1, 1, 3-Tetrachlorotetrafluoropropane Trichloropentafluoropropane (CFC 215) 1, 1, 1-Trichloropentafluoropropane 1, 2, 3-Trichloropentafluoropropane Dichlorohexafluoropropane (CFC 216) Monochloroheptafluoropropane (CFC 217) Bromochlorodifluoromethane (Halon 1211) Bromotrifluoromethane (Halon 1301) Dibromotetrafluoroethane (Halon 2402) Bromodifluoromethane and isomers (HBFC' s)	71-55-6 56-23-5 74-97-5 74-83-9 75-69-4 75-71-8 75-72-9 354-56-3 76-12-0 354-58-5 76-13-1 76-14-2 76-15-3 422-78-6 135401-87-5 3182-26-1 165977 134237-31-3 29255-31-0 2268-46-4 1599-41-3 4259-43-2 76-17-5 661-97-2 422-86-6 353-59-3 45-63-8 124-73-2 1511-62-2	Intentional addition

No.	J E I T A Classifica tion	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
14	C04	Ozone Depleting Substances (Class-II) Substitute Freon (HCFCs)	Dichloromonofluomethane (HCFC 21) Chlorodifluoromethane (HCFC 22) Chlorofluoromethane (HCFC 31) Tetrachlorofluoromethane (HCFC 121) Trichlorodifluoroethane (HCFC 122) Dichlorotrifluoroethane (HCFC 123) Chlorotetrafluoroethane (HCFC 124) Trichlorofluoroethane (HCFC 131)  Dichlorodifluoroethane (HCFC 132) Chlorotrifluoroethane (HCFC 133) Dichlorofluoroethane (HCFC 141)  Chlorodifluoroethane (HCFC 142) Hexachlorofluoropropane (HCFC 221) Pentachlorodifluoropropane (HCFC 222) Tetrachlorotrifluoropropane (HCFC 223) Trichlorotetrafluoropropane (HCFC 224) Dichloropentafluoropropane, (Ethyne, fluoro-) (HCFC 225) Chlorohexafluoropropane (HCFC 226) Pentachlorofluoropropane (HCFC 231) Tetrachlorodifluoropropane (HCFC 232) Trichlorotrifluoro (HCFC 233) Dichlorotetrafluoropropane (HCFC 234) Chloropentafluoropropane (HCFC 235) Tetrachlorofluoropropane (HCFC 241) Trichlorodifluoropropane (HCFC 242) Dichlorotrifluoropropane (HCFC 243) Chlorotetrafluoropropane (HCFC 244) Trichlorofluoropropane (HCFC 251) Dichlorodifluoropropane (HCFC 252) Chlorotrifluoropropane (HCFC 253) Dichlorofluoropropane (HCFC 261) Chlorodifluoropropane (HCFC 262) Chlorofluoropropane (HCFC 271)	75-43-4 75-45-6 593-70-4 134237-32-4 41834-16-6 34077-87-7 63938-10-3 27154-33-2; (134237-34-6)  25915-78-0 1330-45-6 1717-00-6; (25167-88-8)  25497-29-4 134237-35-7 134237-36-8 134237-37-9 134237-38-0 127564-92-5; (2713-09-9) 134308-72-8 134190-48-0 134237-39-1 134237-40-4 127564-83-4 134237-41-5 134190-49-1 134237-42-6 134237-43-7 134190-50-4 134190-51-5 134190-52-6 134237-44-8 134237-45-9 134190-53-7 134190-54-8	1000ppm

No.	J E I T A Classifica tion	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
15	C06	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 addition

**Table 3.2 Environmental controlled chemical substances of Level 2**

No.	J E I T A Classifica tion	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
16	A01	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 —	1000ppm
17	A02	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 —	1000ppm
18	A03	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 —	1000ppm
19	A04	Bismuth and its compounds *1	Bismuth Bismuth nitrate Bismuth telluride Bismuth trioxide Other bismuth compounds	7440-69-9 10361-44-1 1304-82-1 1304-76-3 —	1000ppm

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

No.	J E I T A Classification	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
20	A11	Nickel and its compounds (Exclusion of Alloy)*1, *2	Nickel Nickel(II)oxide Nickel(II)carbonate Nickel(II)sulfate Other nickel compounds	7440-02-0 1313-99-1 3333-67-3 7786-81-4 —	1000ppm
21	A13	Selenium and its compounds *1	Selenium Hydrogen selenide Selenium dioxide Selenium Hexafluoride Sodium selenide Sodium selenate Dimethyl selenide Selenium oxide Other Selenium compounds	7782-49-2 7783-07-5 7446-08-4 7783-79-1 1313-85-5 10112-94-4 593-79-3 12640-89-0 —	1000ppm
22	A08	Brominated flame retardant (except PBBs, PBDEs)	3, 5, 3', 5' -Tetrabromo-bisphenol A (TBBA) 2, 4-Dibromo-phenol 2, 4, 6-tribromo-phenol Pentabromo-phenol Dibromo-propanol Vinylbromide Pentabromo-toluene Tetrabromo phthalic-anhydride Hexabromocyclododecane (HBCDD) Other brominated flame retardant	79-94-7 615-58-7 118-79-6 608-71-9 96-13-9 593-60-2 87-83-2 632-79-1 25637-99-4 —	1000ppm
23	B07	Polyvinyl chloride (PVC) *3	Polyvinyl chloride (CH <sub>2</sub> -CHCL) <sub>n</sub>	9002-86-2	1000ppm
24	C05	Specified Phthalates	Dibutylphthalate (DBP) Bis(2-ethylhexyl) phthalate (DEHP) Diisononyl phthalate (DINP) n-Butyl benzyl phthalate (BBP) n-Dioctyl phthalate (DNOP) Diisodecyl phthalate (DIDP)	84-74-2 117-81-7 28553-12-0 85-68-7 117-84-0 26761-40-0	1000ppm

\*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.

**Table 3.3 Control values regulated by legal regulations and customer requirements (Level 3)**

No.	JEITA Class No.	Environmental Controlled Substances	Applicable Products or Parts	Control Values (ppm)	Legal Regulations and Customer Requirement
16	A01	Antimony	Crust of the product used for a toy	60	EN71-3 *1
17	A02	Arsenic	Crust of the product used for a toy	25	EN71-3 *1
1	A05	Cadmium and its compounds	Lithium ion battery and its packed battery	5	Customer requirement
			Crust of the product used for a toy	75	EN71-3 *1
			Resin, Paint, Ink	75	Belgian regulation
2	A07	Hexavalent Chromium	Crust of the product used for a toy	60	EN71-3 *1
			Lithium ion battery and its packed battery	100	Customer requirement
3	A09	Lead and its compounds	Crust of the product used for a toy	90	EN71-3 *1
			Lithium ion battery and its packed battery (Lead free solder, copper and lead in glass have exclusion.)	40	Customer requirement
			Required product by customer	100	Customer requirement
			Crust of the product or the parts	300	Proposition 65
4	A10	Mercury and its compounds	Crust of the product used for a toy	60	EN71-3 *1
			Lithium ion battery and its packed battery	5	Customer requirement
			Required product by customer	100	Customer requirement
1   4	A05 A07 A09/10	Cadmium Hexavalent Chromium Lead, Mercury	Packing material and ink used for the product	Total 100	EU94/62/EC
21	A13	Selenium	Crust of the product used for a toy	500	EN71-3 *1
7	B02	Polybrominated Biphenyls (PBBs)	Lithium ion battery and its packed battery	100	Customer requirement
8	B03	Polybrominated Diphenyl Ethers (PBDEs)	Lithium ion battery and its packed battery	100	Customer requirement
-	A06	Chromium(except hexavalent)	Crust of the product used for a toy	60	EN71-3 *1
-	—	Barium	Crust of the product used for a toy	1000	EN71-3 *1
24	C05	Specified Phthalates, DEHP, DBP, BBP, DINP, DIDP, DNOP	Toy, Childcare product	1000	76/769/EEC
-	—	Natural rubber	Toy	Prohibition of use	Customer requirement
-	—	Formaldehyde	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	—	PFOS(Perfluorooctanesulfonic acid)	Lithium ion battery and its packed battery, Optica Disk, Digital pen, etc.	Prohibition of use *2	Stockholm Convention 2006/122/EC

No.	JEITA Class No.	Environmental Controlled Substances	Applicable Products or Parts	Control Values (ppm)	Legal Regulations and Customer Requirement
-	A08	TBBP-A (Tetra Bromo Bisphenol-A)	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	—	PAHs (Polycyclic Aromatic Hydrocarbons)	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	—	Ethylene glycol Methyl ester, Ethyl ester and those derivative	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	B07	Polybinylnchloride and its monomer	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	A03	Beryllium and its compounds	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	—	Dioxin halide	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
-	—	Furan	Lithium ion battery and its packed battery	Prohibition of use	Customer requirement
12	C01	Asbestos	Computer Tapes	Prohibition of content	Customer requirement
22	A08	Brominated Flame Retardants *3	Computer Tapes	900	Customer requirement
13	C02	Certain Azo Colorants	Computer Tapes The material with prolonged direct contact to skin is applied	30	Customer requirement
-	—	Chlorinated Hydrocarbons	Computer Tapes	1000	Customer requirement See Table 3.3.1
-	—	Formaldehyde	Computer Tapes	75	Customer requirement
-	—	Formaldehyde - emission *4	wooden materials, pallets, wood packaging made of plywood, pressed wood, and fiber board	must not exceed the emission requirement defined by law	California Law Customer requirement
2	A07	Hexavalent Chromium and its compounds	Computer Tapes Metallic applications	Prohibition of content	Customer requirement
20	A11	Nickel	Computer Tapes The material with prolonged direct contact to skin is applied.	0.5 $\mu$ g/cm <sup>2</sup> /week	Customer requirement
14	C04	Ozone Depleting Substances (ODS)	Computer Tapes	Prohibition of use and content	Customer requirement

No.	JEITA Class No.	Environmental Controlled Substances	Applicable Products or Parts	Control Values (ppm)	Legal Regulations and Customer Requirement
-	—	Polycyclic Aromatic Hydrocarbons (PAH) *3	The material with foreseeable contact to skin is applied.	See *5	Customer requirement
-	—	Perfluorooctane Sulfonates (PFOS)	Computer Tapes Parts, Components and Products	1000	Customer requirement
-	—	Perfluorooctane Sulfonates (PFOS)	Computer Tapes Pretreatments	50	Customer requirement
9	B05	Polychlorinated Biphenyls (PCBs), Polychlorinated Terphenyls (PCTs)	Computer Tapes	50	Customer requirement
10	B06	Polychlorinated Naphthalenes	Computer Tapes	5	Customer requirement
23	A13	Polyvinyl Chloride (PVC)	Computer Tapes Exterior Plastic Case	Prohibition of use	Customer requirement
23	A13	Polyvinyl Chloride (PVC) *3	Computer Tapes	900	Customer requirement
15	C06	Radioactive Substances	Computer tapes	Prohibition of content	Customer requirement
6	A17	Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBT0)	Computer Tapes	5	Customer requirement

\*1 EN71-3 is the regulation as the amount of dissolution.

\*2 Essential use (The product without the alternative technology) is excluded ( EU76/769/EEC, EU2006/122/EC).

\*3 This substance is applied when specified by customer' s products and specifications.

\*4 This substance is regulated by Table 1 and 2 in the section 93120-12, title 17, California Code of Regulation provided.

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\*5 Satisfy the following customer requirement

material with foreseeable contact to skin for longer than 30 seconds	Benzo[a]pyren:1mg/kg Sum 16 PAH(EPA) :10mg/kg
material with foreseeable contact to skin up to 30 seconds	Benzo[a]pyren:20mg/kg Sum 16 PAH(EPA) :200mg/kg

**Table 3.3.1 Chlorinated Hydrocarbons**

No.	J E I T A Classificat ion	Environmental Controlled Substances	Name of Substance	CAS No.	Controlled Value
-	—	Chlorinated Hydrocarbons	Monomethyltetrachlorodiphenylmethane Monomethyldichlorodiphenylmethane Monomethyldibromodiphenylmethane	76253-60-6 81161-70-8 99688-47-8	Customer requirement

**Alteration History of Attached Table**

Date	Contents
July 1, 2008	<p>Table 4. Control values regulated by legal regulations and customer requirements (Level 3)</p> <p>PFOS(Perfluorooctanesulfonic acid), TBBP-A(Tetra Bromo Bisphenol-A), PAHs(PolycyclicAromatic 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.</p>
January 1, 2009	<p>(1) Candidate List 15 substances of REACH Regulation were added to Table 2.</p> <p>(2) SVHC 15 substances were added to Table 3.1 and 3.2.</p> <p>(3) Environmental Controlled Substances required from customers 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>