

**Audio-Technica Group**  
**Environmental Quality Standards**  
**for Products**  
**Fifth Edition**

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## Management's Philosophy Regarding the Environment

Protection of the global environment and appreciation of nature are concepts closely tied to Audio-Technica's ongoing quest for exquisite sound. Determined to leave a more beautiful planet to our children, we at Audio-Technica Group are highly cognizant of the importance of our planet, and all of our corporate activities are designed to be consistent with environmental conservation efforts.

**Kazuo Matsushita**

**President of Audio-Technica corporation**

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Prepared by: Audio-Technica Product Environmental Quality Committee  
Issued by: Quality Assurance Department of Audio-Technica Corporation

## 1. Objective

Based on the environmental policy of Audio-Technica Group (hereafter referred to as the A-T Group), and in an effort to both abide by relevant laws & regulations and offer environmentally friendly products to our customers, we have outlined in this document the A-T Group's internal regulations regarding Environment-related Substances to be Controlled. These regulations are to be used in the carrying out of management and surveillance activities relating to product parts, semi-processed goods provision, assembly, manufacturing and sales. Other important objectives include the clarification of banned and controlled materials and substances; the dissemination of important, topical information within the A-T Group and amongst suppliers; and improvements in, and maintenance of, the environmental quality of the A-T Group's products.

## 2. Scope

These standards apply for materials, parts, half-finished products and finished products that are procured, machined and assembled, and sold by AT Group. Note that the standards may separately be specified for particular management methods varied depending on destinations of the finished products.

These standards are applicable for the following member companies and offices of AT Group.

Audio-Technica Corporation
Technica Fukui Co., Ltd.
Audio-Technica U.S. Inc. (US)
Audio-Technica Ltd. (UK)
Audio-Technica (GC) Ltd. (Hong Kong)
Audio-Technica (S.E.A.) Pte. Ltd. (Singapore)
Audio-Technica Taiwan Co., Ltd.
Audio-Technica (Greater China) Ltd.

### < Contact >

For any question arisen on these standards, contact the AT Group department with which you have business relations. For a particular green procurement procedure applicable for your products or parts, follow that indicated by the AT Group department with which you have business relations.

### 3. Definition of Terms

These standards use the following terminology:

(1) Environment-related Substances to be controlled

Environment-related Substances to be controlled are substances contained in parts and/or half-finished products comprising finished products that are determined by Audio-Technica as having environmental impact on the earth environment and human body.

(2) Prohibited substances

Prohibited substances are those prohibited their use or inclusion. The use of such substances must immediately be stopped if intentionally used or contained. The following substances are also included in prohibited substances: those currently regulated with their inclusion in products or production processes by laws and regulations domestically and/or abroad, those assumed as controlled in the near future, and those recognized well with their high environmental load and specified by AT on its own due to existence of alternative substances to them.

(3) Control substances

These are substances that AT determines as necessary to understand current statuses of their use, or those restricted with their use for products or required with information disclosure on their use statuses by laws and regulations domestically and/or abroad, or those potentially restricted with their inclusion into products in the future.

(4) Substances subject to REACH SVHC (candidate substances)

These are substances designated as Substances of Very High Concern (SVHC) in REACH regulation of European Union (EU) or those subject to authorization thereof (candidate substances).

\* Information on SVHC of which content is more than 0.1 wt% in products destined for EU must be provided for downstream users.

(5) Inclusion

Inclusion is defined as addition, incorporation or adherence of substances to materials used for parts or products regardless whether intentionally or not, and incorporation or adherence of those in production processes, resulting in their presence in final products. For example, if molds, jigs or machining facilities in a production process directly contact and possibly contaminate portions of a product, such portions must be considered subject to inclusion-prohibition of prohibited substances.

(6) Intentional use

Intentional use is defined as intentionally using particular substances during production of parts or products when continuous inclusion of the substances is desired in order to provide particular characteristics, appearance or quality.

(7) Regulation value

When prohibited substances are unintentionally contained as impurities, the regulation value of inclusion concentration, if specified, must be met.

(8) Exemption

Exemption is applicable for substances and their applications exempted by laws and regulations or for substances for which no alternative technology exists at present. Still, reporting their inclusion amounts is mandatory.

(9) Concentration values

Concentration value is calculated using the mass of a homogeneous material as denominator. Note that a homogeneous material is defined as a material impossible to be mechanically broken down into different materials. The following shows examples of homogeneous materials.

- Compounds, polymer alloy, metal alloy, etc.
- Materials ultimately formed by assumed usage of such raw materials as paint, adhesive, ink, paste, resin polymer, glass powder and ceramic powder  
Example: Paint and adhesive dried and hardened; resin polymer formed and shaped; glass and ceramic formed and shaped
- Single layer of paint, printing or plating; each layer of multiple layers of those

## 4. Environment Control Substances Subject to These Standards

### 4-1. Prohibited substances (P\*\*)

The number is assigned to each substance with the initial letter “P” of “Prohibited” affixed. See Sections 5-1 and 5-2 for details of substances together with their applications.

No.	Name of substance
P01	Cadmium and its compounds
P02	Hexavalent chromium compounds
P03	Lead and its compounds
P04	Mercury and its compounds
P05	Bis(tributyltin)oxide (TBTO)
P06	Tri-substituted organostannic compounds (including tributyltin and triphenyltin compounds)
P07	Polybrominated biphenyls (PBBs)
P08	Polybrominated diphenyl ethers (PBDEs)
P09	Polychlorinated biphenyls (PCBs)
P10	Polychlorinated terphenyls (PCTs)
P11	Polychlorinated naphthalene (number of chlorine elements: 3 or more)
P12	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)
P13	Asbestos
P14	Specific azo compounds
P15	Ozone depleting substances
P16	Radioactive substances
P17	Formaldehyde
P18	Polyvinyl chloride (PVC)
P19	Perfluorooctane sulfonate (including salt) (PFOS)
P20	2-(2H-1,2,3-benzotriazole-2-yl)-4,6-di-tert-butylphenol
P21	Cobalt dichloride
P22	Beryllium oxide
P23	Dimethyl fumarate (DMF)
P24	Dibutyltin (DBT) compounds
P25	Diocetyl tin (DOT) compounds

**4-2. Control substances (C\*\*)**

The number is assigned to each substance with the initial letter “C” of “Control” affixed. See Section 5-3 for details of substances together with their applications.

No.	Name of substance	
C01	Specific phthalate ester	Bis(2-ethylhexyl)phthalate (DEHP)
		Dibutyl phthalate (DBP)
		Benzyl butyl phthalate (BBP)
		Di-isononyl phthalate (DINP)
		Di-isodecyl phthalate (DIDP)
		Di-n-octyl phthalate (DNOP)
		Diisobutyl phthalate (DIBP)
C02	Nickel	
C03	Brominated flame retardants (other than PBB, PBDE and HBCDD)	
C04	Perchlorate	
C05	Fluorinated greenhouse gases (HFC, PFC and SF6)	

**4-3. Substances subject to REACH SVHC (candidate substances) (R\*\*)**

The number is assigned to each substance with the initial letter “R” of “REACH” affixed. See Schedule 1 for details of substances together with their applications.

No.	Name of substance
R**	Substances subject to REACH SVHC (candidate substances)

## 5. Control Level of Environment Control Substances

### 5.1. Control level of prohibited substances

#### **P01. Cadmium and its compounds**

Control level	Target application	Regulation value
Prohibition	Packaging material	* See the section for heavy metals in packaging materials.
	Battery and battery pack	* See the section for heavy metals in battery.
	- Plastics (including rubber and film) - Paint, ink, pigment and dye (The regulation value shall be met under the condition with absence of volatilization components.)	100 ppm or less
	All applications except for the items exempted Example: - Electric contacts such as switches and relays - Soluble elements of thermal fuses - Solder - Surface finishing (plating, etc.) or coating - Fluorescent materials contained in fluorescent display units - Resistive elements (glass frit) - Pigment and dye for glass or glass paint - All metals	100 ppm or less
Exemption	- Electric contacts that high reliability is required and no alternative materials is available - Optical glass and filter glass	

#### **P02. Hexavalent chromium compounds**

Control level	Target application	Regulation value
Prohibition	Packaging material	* See the section for heavy metals in packaging materials.
	All applications except for the items exempted Example: - Rustproofing of metals - Resin, paint, ink, pigment	1000 ppm or less
Exemption	Metal chrome and chrome contained in alloy are excluded.	



**P03. Lead and its compounds**

Control level	Target application	Regulation value
Prohibition	Packaging material	* See the section for heavy metals in packaging materials.
	Battery and battery pack	* See the section for heavy metals in battery.
	- Plastics (including rubber and film) - Paint, ink, pigment and dye (The regulation value shall be met under the condition with absence of volatilization components.)	300 ppm or less
	All applications except for those above-mentioned and the items exempted Example: Surface finishing of external electrode of parts and wire lead terminals	1000 ppm or less
	Electroless nickel or gold plating where the amount of lead contained in plated membrane exceeds the regulation value	1000 ppm or less
	Alloys listed below in which regulation values are exceeded: Steel product	3500 ppm or less
	Aluminum alloy	4000 ppm or less
	Copper alloy	40000 ppm or less
	Solder	1000 ppm or less
Exemption	<ul style="list-style-type: none"> <li>- Glass used for cathode ray tube, electronic parts or fluorescent bulb (including resistive element, conductive paste, adhesive and sealing material)</li> <li>- High-melting point solder for internal connection of devices Example: Tin-lead solder alloy with lead content of 85 wt% or more</li> <li>- Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectric devices, or in a glass or ceramic matrix compound</li> <li>- Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher</li> <li>- Optical glass and filter glass</li> <li>- Solder necessary to ensure electric connection between the internal semiconductor die and the carrier of integrated circuit packages (flip chips)</li> </ul>	

**P04. Mercury and its compounds**

Control level	Target application	Regulation value
Prohibition	Packaging material	* See the section for heavy metals in packaging materials.
	Battery and battery pack	* See the section for heavy metals in battery.

	All applications including preparation agent of pigment, paint, ink and plastic	1000 ppm or less
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**P05. Bis(tributyltin)oxide (TBTO) (CAS No. 56-35-9)**

Control level	Target application	Regulation value
Prohibition	All applications including paint, ink, antiseptic agent and fungicide	Intentional use prohibited

**P06. Tri-substituted organostannic compounds (including tributyltin (TBT) and triphenyltin (TPT) compounds)**

Control level	Target application	Regulation value
Prohibition	All applications including paint, ink, antiseptic agent and fungicide	Intentional use prohibited

**P07. Polybrominated biphenyls (PBBs)**

Control level	Target application	Regulation value
Prohibition	All applications including flame retardant for plastics	1000 ppm or less

**P08. Polybrominated diphenyl ether (PBDEs)**

Control level	Target application	Regulation value
Prohibition	All applications including flame retardant for plastics	1000 ppm or less

**P09. Polychlorinated biphenyl (PCBs)**

Control level	Target application	Regulation value
Prohibition	All applications including oil-contained capacitor, capacitor, insulating oil, lubricating oil and plastic flame retardant	Intentional use prohibited

**P10. Polychlorinated terphenyl (PCTs)**

Control level	Target application	Regulation value
Prohibition	All applications including lubricating oil and paint (where the number of chlorine elements of 3 or more is targeted)	Intentional use prohibited

**P11. Polychlorinated naphthalene (number of chlorine elements: 3 or more)**

Control level	Target application	Regulation value
Prohibition	All applications including lubricating oil and paint (where the number of chlorine elements of 3 or more is targeted)	Intentional use prohibited

**P12. Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)**

Control level	Target application	Regulation value
Prohibition	All applications such as printed circuit boards and outer casings of products including accessories	Intentional use prohibited

**P13. Asbestos**

Control level	Target application	Regulation value
Prohibition	All applications including insulating and filling materials	Intentional use prohibited

**P14. Specific azo compounds**

Azo compounds that may produce specific amines listed in the table below when decomposed in accordance with the method specified in Appendix XVII of REACH regulation (EC) No. 1907/2006

Control level	Target application	Regulation value
Prohibition	Pigment on particular portions of products that are made as having the function to continually contact human body (earphone, headphones, belt, strap, etc.), where such portions directly contact human body	Intentional use prohibited
Exemption	Azo compounds used for regions not continually contacting human body	

Specific amines (specific amines that must not be produced through reductive decomposition)

CAS No.	Name of substance
60-09-3	4-aminoazobenzene
90-04-0	o-anisidine
91-59-8	2-naphthylamine
91-94-1	3,3'-dichlorobenzidine
92-67-1	4-aminodiphenyl
92-87-5	Benzidine
95-53-4	o-toluidine
95-69-2	4-chloro-o-toluidine
95-80-7	2,4-toluenediamine

97-56-3	o-Aminoazotoluene
99-55-8	5-nitro-o-toluidine
101-14-4	4,4'-methylenebis (2-chloroaniline)
101-77-9	4,4'-diaminodiphenylmethane
101-80-4	4,4'-oxydianiline
106-47-8	p-chloroaniline
119-90-4	3,3'-dimethoxybenzidine
119-93-7	3,3'-dimethylbenzidine
120-71-8	p-cresidine
137-17-7	2,4,5-trimethylaniline
139-65-1	4,4'-thiodianiline
615-05-4	2,4-diaminoanisole
838-88-0	4,4'-Diamino-3,3'-dimethyldiphenylmethane

**P15. Ozone depleting substances**

Substances subject to Appendix A, B, C or E of Montreal Protocol (including CFCs, HCFCs, HBFCs and carbon tetrachloride)

Control level	Target application	Regulation value
Prohibition	All applications including cleaning agent for parts	Intentional use prohibited

**P16. Radioactive substances**

Control level	Target application	Regulation value
Prohibition	All radioactive substances	Intentional use prohibited

**P17. Formaldehyde (CAS No. 50-00-0)**

Control level	Target application	Regulation value
Prohibition	Woodwork products and parts (speaker, rack, etc.) using particleboard, fiberboard, etc.	Aerial density of less than 0.1 ppm (Chemicals prohibitive regulation of Germany) Aerial density of less than 0.15 mg/m <sup>3</sup> (Formalin act of Denmark)
Exemption	Formaldehyde used for applications other than the above	

**P18. Polyvinyl chloride (PVC) (CAS No. 9002-86-2)**

Control level	Target application	Regulation value
Prohibition	- Packaging materials used for parts and products supplied with the products (for example, bag, tape, clear carton, blister pack, etc.) - Banding band	Intentional use prohibited
Control	All applications other than the above	Subject to control if 0.1% or more to the total weight

**P19. Perfluorooctane sulfonate (including salt) (PFOS)**

Control level	Target application	Regulation value
Prohibition	All applications	Intentional use prohibited
Exemption	<ul style="list-style-type: none"> <li>• Photoresist for photo-lithography process</li> <li>• Photographic coating for film, paper or print original plate</li> </ul>	

**P20. 2-(2H-1,2,3-benzotriazole-2-yl)-4,6-di-tert-butylphenol (CAS No. 3846-71-7)**

Control level	Target application	Regulation value
Prohibition	All applications Example: Plastic molded product, decorative laminate (plastic architectural material) or photographic paper as ultraviolet protectant or absorbent	Intentional use prohibited

**P21. Cobalt dichloride (CAS No. 7646-79-9)**

Control level	Target application	Regulation value
Prohibition	Humidity indicator used for desiccant (such as silica gel)	Intentional use prohibited
Exemption	Cobalt chloride used for applications other than the above	

**P22. Beryllium oxide (CAS No. 1304-56-9)**

Control level	Target application	Regulation value
Prohibition	All applications including raw materials for ceramics	Intentional use prohibited

**P23. Dimethyl fumarate (DMF) (CAS No. 624-49-7)**

Control level	Target application	Regulation value
Prohibition	All applications including fungicide and desiccant (such as silica gel)	Intentional use prohibited

**P24. Dibutyltin (DBT) compounds**

Control level	Target application	Regulation value
Prohibition	All applications except those subject to control	1000 ppm or less for homogeneous materials (tin equivalent)
Control	<ul style="list-style-type: none"> <li>- Applications as additives for one-component and two-component room-temperature curing sealants and adhesives</li> <li>- Catalytic agents for paints and coatings</li> <li>- Applications as additives for soft PVC profiles including coextrusion moldings with rigid polyvinyl chloride (PVC)</li> </ul>	Subject to prohibition from October 2014

**P25. Dioctyltin (DOT) compounds**

Control level	Target application	Regulation value
Prohibition	Applications as additives for textile products which come in contact with skin	1000 ppm or less for homogeneous materials (tin equivalent)
Exemption	All applications other than the above	

**5-2. Control level in special application of prohibited substances**

**5-2-1. Heavy metals for packaging materials (cadmium, hexavalent chromium, lead and mercury)**

Control level	Target application	Regulation value
Prohibition	The inclusion amount of heavy metal (mercury, cadmium, hexavalent chromium and lead) is regulated in terms of each homogeneous material in members comprising packaging. Example of packaging materials: Individual packaging, shipping carton, clear carton, polyethylene bag, tape, etc. Example of homogeneous materials: Paper, ink, paint, polyethylene film, adhesive, etc.	Total heavy metal concentration of less than 100 ppm

**5-2-2. Heavy metal in battery (cadmium, lead and mercury)**

Control level	Substance subject to control	Target application	Regulation value
Prohibition	Cadmium	Nickel-cadmium battery	Use prohibited
		Battery or battery pack other than the above	0.002% or less of the total weight of the battery
	Lead	Manganese dioxide and alkaline-manganese batteries	0.2% or less of the total weight of the battery
		Battery or battery pack other than the above	0.4% or less of the total weight of the battery
	Mercury	Button battery	2% or less of the total weight of the battery
		Manganese dioxide and alkaline-manganese batteries	0.0001% or less of the total weight of the battery
Battery or battery pack other than the above		0.0005% or less of the total weight of the battery	

Note: For heavy metal contained in plastics, paint or ink used for battery packs and other parts, the regulation values shall be followed.

**5-3. Control level of control substances**

**< Control range >**

Where the substances listed below are intentionally used or their inclusion is known, applications using those substances shall be subject to control.

**C01. Specific phthalate ester**

Name of substance	Abbreviation	CAS No.
Bis(2-ethylhexyl)phthalate	DEHP	117-81-7
Dibutyl phthalate	DBP	84-74-2
Benzyl butyl phthalate	BBP	85-68-7
Di-isononyl phthalate	DINP	28553-12-0
Di-isodecyl phthalate	DIDP	26761-40-0
Di-n-octyl phthalate	DNOP	117-84-0
Diisobutyl phthalate	DIBP	84-69-5

Control level	Target application
Control	All applications including plasticizer, additive, dye and pigment

**C02. Nickel (CAS No. 7440-02-0)**

Control level	Target application
Control	All applications including nickel plating and stainless component

**C03. Brominated flame retardants (other than PBB, PBDE and HBCDD)**

Control level	Target application
Control	Bromine-related flame retardant other than PBB, PBDE and HBCDD Applications as flame retardant or plasticizer for plastics and those as flame retardant used for printed wiring

**C04. Perchlorate**

Control level	Target application
Control	All applications including coin cell battery



**C05. Fluorinated greenhouse gases (HFC, PFC and SF6)**

Control level	Target application
Control	All applications including cleaning agent for parts

**5-4. Control level of substances subject to REACH SVHC (candidate substances)**

**< Control range >**

Where the substances listed below are intentionally used or their inclusion is known, applications using those substances shall be subject to report.

**R\*\*. Substances subject to REACH SVHC (candidate substances)**

\* See Schedule 1 for the list of the substances.

Control level	Target application
Report	All applications

## 6. Quantitative Analysis Method

Standard analysis methods are described below.

### 6-1. Cadmium, lead and their compounds

#### 1) Pretreatment method

The following four methods are listed as pretreatment methods.

1. Ashing method under the presence of sulfuric acid (e.g., IEC 62321: 2008)
2. Pressurized acid decomposition method within airtight containers (microwave decomposition method; e.g., EN 13346: 2000 and EPA 3052: 1996)
3. Acid decomposition method using nitric acid, hydrogen peroxide solution or hydrochloric acid (e.g., EPA 3050B Rev.2: 1996)
4. Wet digestion method using sulfuric acid, nitric acid or hydrogen peroxide solution (e.g., BS EN 1122: 2001)

\* If deposits (or insoluble matter) are produced in any method listed above, the deposits require to be completely dissolved into solution by using such methods as alkali melting method.

\* Elution methods represented by EN71-3: 1994, ASTM F963-96a or ISO 8124-3: 1997 shall not be applicable for pretreatment. Also, EN 1122: 2001 shall not be applicable for pretreatment lead.

#### 2) Measurement method

The following three are main measurement methods.

1. Inductively coupled plasma emission spectroscope {ICP-AES (ICP-OES)} (e.g., EN ISO 11885: 2007)
2. Atomic absorption spectrometer (AAS) (e.g., EN ISO 5961: 1995)
3. Inductively coupled plasma mass spectroscope (ICP-MS) (e.g., IEC 62321: 2008)  
Alternatively, the methods described in IEC 62321: 2008 shall be applicable when it is assured that the lower limit of determination is less than 5 ppm for cadmium alone and less than 30 ppm for lead alone using the combination of pretreatment and measurement devices. Note that cadmium and lead can concurrently be analyzed using methods other than AAS listed above.

### 6-2. Hexavalent chromium compounds

#### 1) Pretreatment method

Elution method {boiling water extraction method and alkali extraction method (e.g., EPA 3060A and IEC 62321: 2008 Annex C)}

#### 2) Measurement method

Ultraviolet-visible radiation spectrophotometric method (e.g., EPA 7196A and IEC 62321: 2008 Annex C)

### 6-3. Mercury and its compounds

#### 1) Pretreatment method

The following three are main pretreatment methods.

1. Pressurized acid decomposition method within airtight containers {microwave decomposition method (e.g., EPA 3052: 1996 and IEC 62321: 2008)}
2. Heated aeration cooled atomic absorption (e.g., IEC 62321: 2008)
3. Wet decomposition method with sulfuric acid or nitric acid using decomposition flasks with reflux condensers (Kjeldahl method).

\* Care must be taken for mercury not to be vaporized and proliferated. If deposits are produced, they require to be dissolved into solution by using certain methods.

**2) Measurement method**

Similarly to the case for cadmium and lead, analyses using the following methods are considered appropriate if low concentration incorporation is predicted: Reduction aeration atomic absorption method, ICP-AES (ICP-OES) with hydrogenation device or ICP-MS.

**6-4. Polybrominated biphenyl (PBBs) and polybrominated diphenyl ether (PBDEs)**

**1) Pretreatment method**

The solvent extraction method and the post-pulverization soxhlet extraction method can be listed.

**2) Measurement method**

High-resolution gas chromatography/mass spectrometer (FRGC/HRMS)

**6-5. Heavy metals in packaging materials (mercury, cadmium, hexavalent chromium and lead)**

The total chromium content shall be analyzed to verify that the total concentration of its four elements is less than 100 ppm. If the total concentration is 100 ppm or more, hexavalent chromium in the total chromium shall be analyzed to verify that the summed concentration of mercury, cadmium, hexavalent chromium and lead is less than 100 ppm.

**1) Pretreatment method**

For cadmium, lead and total chromium, comply with the pretreatment method for cadmium, lead and their compounds described in Section 6-1. For mercury, comply with the pretreatment method for mercury and their compounds described in Section 6-3.

**2) Measurement method**

For cadmium, lead and total chromium, comply with the measurement method for cadmium, lead and their compounds described in Section 6-1. For mercury, comply with the measurement method for mercury and their compounds described in Section 6-3. Alternatively, other methods shall be applicable if it is assured that the lower limit of determination is less than 5 ppm for cadmium alone, less than 5 ppm for mercury alone, less than 5 ppm for total chromium alone and less than 30 ppm for lead alone using the combination of pretreatment and measurement devices. Note that cadmium, lead and total chromium can concurrently be analyzed using methods other than AAS listed above.

## 7. Appendix

Environment control substances and main examples of laws and regulations in some countries

Note: Details of regulations should be checked with latest editions thereof, as they are subject to revision.

Name of substance	Regulation
Cadmium and its compounds	EU: RoHS Directive (2002/95/EC), Battery Directive (2006/66/EC), REACH regulation (No. 1907/2006) and Packaging & Packaging Waste Directive (94/62/EEC)
	U.S.: Proposition 65
Hexavalent chromium compounds	EU: RoHS Directive (2002/95/EC) and Packaging & Packaging Waste Directive (94/62/EEC)
Lead and its compounds	EU: RoHS Directive (2002/95/EC), Battery Directive (2006/66/EC), REACH regulation (No. 1907/2006) and Packaging & Packaging Waste Directive (94/62/EEC)
	U.S.: Proposition 65
Mercury and its compounds	EU: RoHS Directive (2002/95/EC), Battery Directive (2006/66/EC), REACH regulation (No. 1907/2006) and Packaging & Packaging Waste Directive (94/62/EEC)
Bis(tributyltin)oxide (TBTO)	Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Specified Chemical Substances Class 1
	EU: REACH regulation (No. 1907/2006)
Tri-substituted organostannic compounds (including tributyltin and triphenyltin compounds)	Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Specified Chemical Substances Class 2
	EU: REACH regulation (No. 1907/2006)
Polybrominated biphenyls (PBBs)	EU: RoHS Directive (2002/95/EC) and REACH regulation (No. 1907/2006)
Polybrominated diphenyl ether (PBDEs)	EU: RoHS Directive (2002/95/EC) and REACH regulation (No. 1907/2006)
Polychlorinated biphenyl (PCBs)	Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Specified Chemical Substances Class 1
Polychlorinated terphenyl (PCTs)	EU: REACH regulation (No. 1907/2006)
Polychlorinated naphthalene	Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Specified Chemical Substances Class 1
Short-chained chlorinated paraffin	EU: REACH regulation (No. 1907/2006)
Asbestos	EU: REACH regulation (No. 1907/2006)
	Japan: Industrial Safety and Health Law
Specific azo compounds	EU: REACH regulation (No. 1907/2006)
Ozone depleting substances	EU: Directive on Ozone Depleting Substances (No.2037/2000)
	U.S.: Clean Air Act

	Japan: Law Concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other Measures
Radioactive substances	Japan: Nuclear Reactor Regulation Law
Formaldehyde	Germany: Chemicals prohibitive regulation
	Denmark: Formalin act
Perfluorooctane sulfonate (including salt) (PFOS)	EU: POPs regulation (No. 757/2010)
	Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Specified Chemical Substances Class 1
2-(2H-1,2,3-benzotriazole-2-yl)-4,6-di-tert-butylphenol	Japan: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc., Specified Chemical Substances Class 1
Cobalt dichloride	EU: REACH regulation (No. 1907/2006)
Beryllium oxide	Japan: Industrial Safety and Health Law
Dimethyl fumarate (DMF)	EU: European Commission Decision (2009/251/EC)
Dibutyltin (DBT) compounds	EU: REACH regulation (No. 1907/2006)
Dioctyltin (DOT) compounds	EU: REACH regulation (No. 1907/2006)

## 8. Revision History and Comment

### 8-1. Revision history

Edition	Issued	Major revisions	Approved	Drafted
Initial edition	June 30, 2006			Environmental Quality Promotion WG
2nd edition	June 27, 2008	Added "Machida Office" in Section 2, Scope. Added two substances in Section 4-1, Prohibited substances. Specified phthalate ester in Section 4-2, Control substances. Added two substances in Section 6, Appendix.	080515 Responsible person of Quality Assurance Control Division: Ishiwata	080515 Product Environmental Quality Committee
3rd edition	July 17, 2008	Changed the regulation value in Section 4.1, Heavy metals in battery. Section 6, Appendix, Regulation: Battery Directive (2006/66/EC)	080717 Responsible person of Quality Assurance Control Division: Ishiwata	080717 Product Environmental Quality Committee
4th edition	November 1, 2010	The office consolidation at Technica Fukui Co., Ltd. in Section 2, Scope. Added substances subject to REACH approval in Section 4, Substances subject to environment control. The control level of environment control substances was separated as Item 5 and the item numbers were changed accordingly. Added prohibited substances. Changed some expression. Changed all regulation values on cadmium to 100 ppm. Sorted out the control substances and deleted some. Added substances subject to REACH SVHC (Schedule 1). Changed target application of nickel. Added "IEC 62321: 2008" in Section 6, Quantitative Analysis Method. Added substances and related regulations in Section 7, Appendix.	101101 Responsible person of Quality Assurance Control Division: Katai	101101 Product Environmental Quality Committee

5th edition	September 3, 2012	<p>Added dibutyltin (DBT) compounds and dioctyltin (DOT) compounds as prohibited substances in Section 4.</p> <p>Changed the regulation value of PFOS to “Intentional use prohibited” for all applications in Section 5.</p> <p>Added substances and related regulations in Section 7, Appendix.</p>	<p>120903</p> <p>Responsible person of Quality Assurance Control Division: Katai</p>	<p>120903</p> <p>Product Environmental Quality Committee</p>
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## 8-2. Comment

### **Fifth edition (revised on Sep. 3, 2012)**

These standards were closely investigated for adequacy based on the laws and ordinances enforced in countries and movement of communities after the issue of the fourth edition.

#### 4. Environment Control Substances Subject to These Standards

Dibutyltin (DBT) compounds and dioctyltin (DOT) compounds are changed from control substances to prohibited substances.

#### 5. Control Level of Environment Control Substances

##### 5.1. Control level of prohibited substances

- The description of “Intentional use prohibited” was deleted from the regulation value for six substances subject to RoHS.
- Exemptions of lead and its compounds have been revised
- Because long period of time has passed since discontinuation of sales of PFOS materials, the regulation value of PFOS was changed to “Intentional use prohibited” for all applications.
- “P24. Dibutyltin (DBT) compounds” and “P25. Dioctyltin (DOT) compounds” were added. Gradual change to substances subject to prohibition depending on their use was clearly described.

“Subject to prohibition from October 2014”

##### 5-2. Control level in special application of prohibited substances

- The description of “Intentional use prohibited” was deleted from the regulation value for heavy metals for packaging materials.

#### 7. Appendix

- Names of prohibited substances were added. An applicable regulation was changed.

### **Fourth edition (revised on Oct. 1, 2010)**

These standards were closely investigated for adequacy based on the laws and ordinances enforced in countries and movement of communities after the issue of the third edition.

#### 2. Scope

Due to office consolidation at Technica Fukui Co., Ltd. in 2010, the description was changed for only listing the company name.

#### 4. Environment Control Substances Subject to These Standards

Prohibited and control substances were added or deleted and some expressions were modified in order to correspond to REACH.

#### 5. Control Level of Environment Control Substances

##### 5.1. Control level of prohibited substances

- The description of control level for heavy metal contained in packaging materials and batteries was separated to Section 5-2.
- The regulation value of cadmium was changed to 100 ppm in accordance with laws and regulations even though the value had been set to 75 ppm to meet the severer standards implemented by the business partner.
- The description “1000 ppm or less” was deleted from the regulation value of bis(tributyltin)oxide. Also, only “Intentional use prohibited” was made effective.
- Tri-substituted organostannic compounds was specified to integrate tributyltin and triphenyltin compounds. The description “1000 ppm or less” was deleted from the regulation value. Also, only “Intentional use prohibited” was made effective.
- The description “1000 ppm or less” was deleted from the regulation value of polychlorinated



biphenyl. Also, only “Intentional use prohibited” was made effective.

- Polychlorinated terphenyl was added.
- The description “1000 ppm or less” was deleted from the regulation value of asbestos. Also, only “Intentional use prohibited” was made effective.
- Specific amine was specified, as it must not be produced by decomposition of specific azo compounds.
- Cobalt dichloride, beryllium oxide and dimethyl fumarate were added to the intentional use prohibited substances.

#### 5-3. Control level of control substances

- The following substances were deleted: Dihexyl phthalate (specific phthalate ester), antimony and its compounds, arsenic and its compounds, beryllium and its compounds, bismuth and its compounds, selenium and its compounds and chlorine-related flame retardant.
- The following substances were added: Diisobutyl phthalate (specific phthalate ester), dibutyltin compounds, dioctyltin compounds, perchlorate and fluorinated greenhouse gases (HFC, PFC and SF6).
- Target application of nickel was expanded, describing “All applications including nickel plating and stainless component.”

#### 5-4. Control level of substances subject to REACH SVHC [approval (candidate substances)]

- All texts were added in order to correspond to REACH regulation.

#### 6. Quantitative Analysis Method

- “IEC 62321: 2008” as an international standard officially issued was added for the ashing method under the presence of sulfuric acid.

#### 7. Appendix

- Names of prohibited substances were added. Various regulations were added.

### **Third edition (revised on July 17, 2008)**

The regulation values were changed in order to correspond to the revision of EU Battery Directive.

#### 4.1. Change of the regulation value of heavy metals for batteries

The regulation value regarding cadmium was additionally specified: “Battery or battery pack other than nickel-cadmium battery: 0.002% or less of the total weight of the battery.”

The regulation values and an item regarding lead were additionally specified or deleted as follows:

“Manganese dioxide and alkaline-manganese batteries: 0.2% or less of the total weight of the battery.”

“Compact sealed lead battery” was deleted based on understanding that it would not be used for AT Group products.

#### 6. Appendix and Regulations

The directive number was changed due to the revision of Battery Directive: “91/157/EEC” to “2006/66/EC.”

### **Second edition (revised on June 27, 2008)**

These standards were closely investigated for adequacy based on the environment-related laws and ordinances enforced in countries and movement of communities after the issue of the initial edition.

#### 2. Scope

“Material” was added to Scope.

The target scope was properly set.

“Machida Office” was added to the target offices, and thereby Special Equipment Department of

Machida Office appeared for the first time.

4-1. Prohibited substances

The following two substances were added:

- “Perfluorooctane sulfonate (including salt) (PFOS)” to correspond POPs pact
- “Specific benzotriazole” to correspond to revision of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

4-2. Control substances

“Phthalate ester” was added with “Specific” to limit the target to seven types of phthalate ester.

6. Appendix

“Perfluorooctane sulfonate (including salt) (PFOS)” and “Specific benzotriazole” were added.