

**MANAGEMENT REGULATIONS FOR THE  
ENVIRONMENT-RELATED SUBSTANCES TO BE  
CONTROLLED WHICH ARE INCLUDED IN  
PARTS AND MATERIALS**

SS-00259 for General Use, Fifth Edition

**SONY**

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## 1. PURPOSE

With regard to the “Environment-related Substances to be Controlled (“Controlled Substances”)” contained in the parts and devices employed in Sony electronics products, this Standard clarifies (1) banned substances, (2) substances to be phased out, and (3) exempted substances and their uses, in order to realize the following aims and objectives:

- 1) To prevent the above-mentioned substances from being used for Sony electronics products;
- 2) To comply with related laws and regulations;
- 3) To reduce the influence of the above substances upon the ecosystem; and
- 4) To contribute to the preservation of the global environment.

## 2. SCOPE

### 2.1 Scope applicable to parts and materials

Targets are the parts, materials, and other articles that are procured by the Sony group, or by third parties to which the Sony group outsources the design and manufacture of its electronics products.

The targets need to satisfy the criteria specified in this Standard.

Target parts and materials:

- Semi-finished products (e.g. modules, functional units, board assemblies, and other assembly parts)
- Parts (electrical parts, mechanical parts, semiconductor devices, PWBs, recording media, packaging materials, and packaging components)
- Screws
- Accessories (mice, remote commanders, AC adaptors, and other accessories with which you can use products)
- Materials constituting subsidiary parts and materials (e.g. adhesives, adhesive tapes, soldering materials, etc.) used for products
- Instruction manuals
- Repair parts for products on the market (Sony will later issue a notice to clarify details.)
- Packaging materials that parts suppliers use for delivery and protection (See Table 4.3a for details)

### 2.2 Scope applicable to products

- 1) Sony electronics products that are designed and manufactured by the Sony group for sale, loan, or distribution
- 2) Sony electronics products being sold and loaned or distributed with the Sony group’s logos on them, whose design and/or manufacture are outsourced to third parties
- 3) Third parties’ electronics products whose design and/or manufacture are outsourced to the Sony group (except when the parts and materials are specified by the third parties)

Regarding the use of substances prohibited or restricted by regional or country laws and ordinances, the laws and ordinances must be observed and followed even though the substances and their uses are not clearly regulated in this Standard.

### 3. TERMS AND DEFINITIONS

In this Standard, terms are defined in the following manners.

- 1) "Environment-related Substances to be Controlled ('Controlled Substances')"  
Among the substances contained in parts and devices, "Environment-related Substances to be Controlled ('Controlled Substances')" are those which, according to Sony's judgment, have significant environmental-impact on both humans and the global environment.
  - 2) Management standards  
To manage the above-mentioned substances, the following Levels and Exemption are used:
    - a) Level 1  
The substances and their uses classified into this Level are those that must be banned immediately.
    - b) Level 2  
The substances and their uses classified into this Level are those for which a period for phase-out is individually set.  
On or after the date set in each table, the substances in the respective tables shall be reclassified into Level 1 for an immediate ban on their use in parts and materials.
    - c) Level 3  
No effective date of the ban on the delivery is currently set for the substances and their uses classified into this Level. The ones under Level 3 shall be reclassified into Level 2 for banning the use of them in phases, depending on the availability of alternative parts or materials that satisfy the intended uses.
    - d) Exemption  
The substances and their uses classified as Exemption are those not regulated by or exempted from laws, or excepted from the 'Controlled Substances' because of the unavailability of adequate alternative parts and materials that satisfy the intended uses.
  - 3) Contained  
"Contained" is a situation in which a substance is added to, is blended with, fills up, or adheres to:
    - a) The parts or devices employed in products, or
    - b) The materials used for the parts or devices, regardless if the situation is intentionally created or not.  
(When a substance is unintentionally contained in, or added to a product in a processing process, this situation is also regarded as "Contained.")
 There are substances called Dopants (Doping Agents) that are intentionally added to manufacture semiconductor devices, etc. They are not treated as "Contained" if present in the devices in a very small amount.
  - 4) Impurity  
An "Impurity" is a substance that satisfies either or both of the following conditions:
    - a) One contained in a natural material, which cannot be completely removed in a refining process by technical means (i.e. natural impurities); and
    - b) One generated in a synthesis process, which cannot be completely removed by technical means.  
There are substances called "impurities," the name of which is used to distinguish them from main materials. If they are used for the purpose of changing the characteristics of a material, they are treated as "Contained."
- Note: The 'Controlled Substance,' which mingles with or adheres to parts or devices as an "Impurity," must not exceed its allowable concentration specified in this Standard.
- 5) Effective date of the ban on the delivery  
This indicates the date on or after which Sony won't accept the parts and/or materials specified in the corresponding columns of Table 4.2.
  - 6) Plastics defined in SS-00259  
Plastics refer to materials and raw materials composed of synthetic high-molecular polymers in this Standard.  
More specifically, "plastics" mainly mean the following articles composed of synthetic high-molecular polymers: resins, films, adhesives, adhesive tapes, molded products, products made of synthetic rubber, and plastics made from raw materials of plant origin.  
When a natural resin is synthesized with any one of the above articles, the synthetic substance is a plastic.

#### 4. MANAGEMENT STANDARDS FOR “ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED”

##### 4.1 “Environment-related Substances to be Controlled (‘Controlled Substances’)”

The table below lists the “Environment-related Substances to be Controlled (‘Controlled Substances’),” defined in this Standard.

**Table 4.1 List of “Environment-related Substances to be Controlled (‘Controlled Substances’)”**

Substances	
Heavy metals	Cadmium and cadmium compounds
	Lead and lead compounds
	Mercury and mercury compounds
	Hexavalent chromium compounds
Chlorinated organic compounds	Polychlorinated biphenyls (PCB)
	Polychlorinated naphthalenes (PCN)
	Polychlorinated terphenyls (PCT)
	Chlorinated paraffins (CP)
	Other chlorinated organic compounds
Brominated organic compounds	Polybrominated biphenyls (PBB)
	Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])
	Other brominated organic compounds
Tributyltin compounds	
Triphenyltin compounds	
Asbestos	
Specific azo compounds	
Formaldehyde	
Polyvinyl chloride (PVC) and PVC blends	

**Table 4.2 Main “Targets” and “Effective date of the ban on the delivery”  
regarding ‘Controlled Substances’**

Substances: Cadmium and cadmium compounds		
All metals, alloys, inorganic compounds, metal-organic compounds, inorganic salts, organic salts, and other substances		
	Targets	Effective date of the ban on the delivery
Level 1	<ul style="list-style-type: none"> <li>- Packaging materials (See page 13.)</li> <li>- The stabilizers, pigments, or dyes used for plastics (including rubber) materials (e.g. labels, cabinets, phonograph records, binding bands, the keys of remote commanders, the outer plastic resins of electrical parts, and the insulators of electrical wiring)</li> <li>- Paints, inks</li> <li>- Surface treatment (e.g. electroplating, electroless plating, etc.) and coating</li> <li>- Photographic films</li> <li>- Fluorescent lamps (small-sized ones, straight-tube ones)</li> </ul>	Banned since the establishment of this Standard
	<p>All uses except those specified in Exemption Typical examples are given below:</p> <ul style="list-style-type: none"> <li>- Switches, relays, breakers, DC motors, and other electrical contact points</li> <li>- Fuse elements of temperature fuses</li> <li>- Glass, and the pigments as well as dyes of glass paints (paints for glass and the pigments as well as dyes used for glass)</li> <li>- Solder (whose cadmium concentration is more than 20 ppm)</li> <li>- CdS-photocells and the phosphors contained in fluorescent display devices</li> <li>- Resistor elements (glass frit)</li> </ul>	Banned since January 1, 2005
	<ul style="list-style-type: none"> <li>- Parts composed of metals containing zinc (e.g. brass, hot dip galvanizing, etc.) whose cadmium concentration is more than 100 ppm</li> </ul>	Banned since October 1, 2005
Exemption	<ul style="list-style-type: none"> <li>- Cadmium and cadmium compounds in electrical contacts and cadmium plating of electrical contacts, for which high reliability is required and which has no alternative materials</li> <li>- Cadmium in optical glass, filter glass</li> </ul>	N/A

Allowable concentration: Less than 5 ppm for plastics (including rubber), paints, and inks	
Standards for measurement	
1) Preconditioning	
Typical preconditioning methods are as follows:	
(1) Incineration under the existence of sulfuric acid;	
(2) A pressurized acid decomposition method done in a sealed container (a microwave decomposition method [e.g. EPA 3052:1996, EN 13346:2000]);	
(3) An acid decomposition method under the existence of nitric acid, hydrogen-peroxide water and hydrochloric acid (e.g. EPA3050B Rev.2:1996); and	
(4) A wet decomposition method under the existence of sulfuric acid, nitric acid, and hydrogen-peroxide water (e.g. BS EN 1122:2001).	
Note: In the process of preconditioning, precipitates must be completely dissolved by some technical means (e.g. alkali fusion).	
2) Measurement methods	
Typical measurement methods are as follows:	
(1) Inductively Coupled-Plasma-Atomic (Optical) Emission Spectroscopy (ICP-AES [ICP-OES]) (e.g. EN ISO 11885:1998);	
(2) Atomic Absorption Spectroscopy (AAS) (e.g. EN ISO 5961:1995); and	
(3) Inductively Coupled-Plasma Mass Spectroscopy (ICP-MS).	
- If a combination of a preconditioning method and a measurement method can guarantee that the limit of quantification for cadmium is less than 5 ppm, the combination is also applicable.	
- Both cadmium and lead can be simultaneously analyzed by each of the measurement methods (except for AAS) mentioned above.	
Note: The extraction methods (including EN71-3:1994, ASTM F963-96a, ASTM F963-03, ASTM D 5517, and ISO 8124-3) must not be applied to the preconditioning methods specified in this Standard.	
When performing measurements based on JIS K 0102, "Testing methods for industrial wastewater," which refers only to measurement methods in section 55, preconditioning methods that are actually applied must be specified along with that JIS standard.	

Substances: Lead and lead compounds		
All metals, metal alloys, inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page13.) - The paints, and inks containing lead, which are used for PWBs	Banned since the establishment of this Standard
	- Surface coatings (plating) for the external electrodes, lead wires, and other areas of parts (e.g. electrical parts, semiconductor devices, and heat sinks) - The stabilizers, pigments, and dyes contained in the plastic (including rubber) materials that are used for outer and exposed areas of the following articles: mice, devices, AC adaptors, connection cords, remote commanders, and power supply cords - The paints and inks used for outer and exposed areas of devices	Banned since April 1, 2004



Level 1	<p>All uses except those specified in Level 3 and Exemption                      Typical examples are given below:</p> <ul style="list-style-type: none"> <li>- The surface coatings for the external electrodes, lead wires, etc. of the parts contained in AC adaptors, remote commanders, semiconductor devices, etc.</li> <li>- Leaded solder that meets both of the following conditions: 1) lead content is less than 85 wt%; and 2) lead content is more than 1000 ppm</li> <li>- All kinds of alloys (including solder materials) whose individual lead concentrations exceed their allowable ones provided in the table at the bottom of Exemption below. (*1)</li> <li>- The stabilizers, pigments, and dyes contained in the plastic (including rubber) materials that are used for areas (excluding outer and exposed ones) of the following articles: mice, devices, AC adaptors, connection cords, remote commanders, and power supply cords</li> <li>- The paints and inks used for areas other than the outer and exposed ones of devices</li> </ul>	Banned since January 1, 2005										
	<ul style="list-style-type: none"> <li>- Electroless nickel plating film and electroless gold plating film whose lead content is more than 1000 ppm</li> </ul>	Banned since February 1, 2006										
Level 3	<ul style="list-style-type: none"> <li>- Electroless nickel plating film and electroless gold plating film whose lead content is 1000 ppm or less</li> </ul>	N/A										
Exemption	<ul style="list-style-type: none"> <li>- High melting temperature type solder (i.e. lead based alloys containing 85 wt% or more)</li> <li>- Electronic ceramic parts (e.g. piezoelectric devices, dielectric ones, and magnetic ones [ferrites])</li> <li>- Optical glass, filter glass</li> <li>- Glass of cathode ray tubes, glass of electronic components, and glass of fluorescent tubes</li> </ul> <p>The above glass materials include adhesives, resistor elements, glass frit, conductive pastes (silver or copper ones), and sealing materials.</p> <ul style="list-style-type: none"> <li>- Solder consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 wt% and less than 85 wt%</li> <li>- Solder to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages</li> </ul> <p style="text-align: center;"><b>(*1) Allowable lead concentrations</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Type of alloy</th> <th>Allowable lead concentration</th> </tr> </thead> <tbody> <tr> <td>Steel</td> <td>up to 0.35 wt%</td> </tr> <tr> <td>Aluminum alloy</td> <td>up to 0.4 wt%</td> </tr> <tr> <td>Copper alloys (including brass and phosphor bronze)</td> <td>up to 4 wt%</td> </tr> <tr> <td>Solder</td> <td>up to 1000 ppm</td> </tr> </tbody> </table>	Type of alloy	Allowable lead concentration	Steel	up to 0.35 wt%	Aluminum alloy	up to 0.4 wt%	Copper alloys (including brass and phosphor bronze)	up to 4 wt%	Solder	up to 1000 ppm	N/A
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Steel	up to 0.35 wt%											
Aluminum alloy	up to 0.4 wt%											
Copper alloys (including brass and phosphor bronze)	up to 4 wt%											
Solder	up to 1000 ppm											

Allowable concentration: Less than 100 ppm for plastics (including rubber), paints, and inks	
Standards for measurement	
1) Preconditioning	
Typical preconditioning methods are as follows:	
(1) Incineration under the existence of sulfuric acid;	
(2) A pressurized acid decomposition method done in a sealed container (a microwave decomposition method [e.g. EPA 3052:1996, EN 13346:2000]);	
(3) An acid decomposition method under the existence of nitric acid, hydrogen-peroxide water, and hydrochloric acid (e.g. EPA 3050B Rev.2:1996); and	
(4) A wet decomposition method under the existence of nitric acid and hydrogen-peroxide water	
Note: In the process of preconditioning, precipitates must be completely dissolved by some technical means (e.g. alkali fusion).	
2) Measurement methods	
Typical measurement methods are as follows:	
(1) Inductively Coupled-Plasma-Atomic (Optical) Emission Spectroscopy (ICP-AES [ICP-OES]) (e.g. EN ISO 11885:1998);	
(2) Atomic Absorption Spectroscopy (AAS) (e.g. EN ISO 5961:1995); and	
(3) Inductively Coupled-Plasma Mass Spectroscopy (ICP-MS).	
- If a combination of a preconditioning method and a measurement method can guarantee that the limit of quantification for lead is less than 30 ppm, the combination is also applicable.	
- Both cadmium and lead can be simultaneously analyzed by each of the measurement methods (except for AAS) mentioned above.	
Note: The extraction methods (including EN71-3:1994, ASTM F963-96a, ASTM F963-03, ASTM D 5517, and ISO 8124-3) must not be applied to the preconditioning methods specified in this Standard.	
EN 1122 is not applicable to the preconditioning methods for lead.	
When performing measurements based on JIS K 0102, "Testing methods for industrial wastewater," which refers only to measurement methods in section 54, preconditioning methods that are actually applied must be specified along with that JIS standard.	

Substances: Mercury and mercury compounds		
All metals, alloys, inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page 13.) - Paints, and inks - Hour meters - The relays, switches, or sensors whose contacts contain mercury - Mercury or its compounds mixed in plastics	Banned since the establishment of this Standard
	- Small-sized fluorescent lamps whose mercury content (per lamp) is 5 mg or more - Straight-tube fluorescent lamps whose mercury content (per lamp) is 5 mg or more - All uses except those specified in Exemption	Banned since January 1, 2005
Exemption	- Lamps other than small-sized fluorescent ones and straight-tube fluorescent ones (e.g. high-pressure mercury lamps) - Small-sized fluorescent lamps whose mercury content (per lamp) is less than 5 mg - Straight-tube fluorescent lamps whose mercury content (per lamp) is less than 5 mg	N/A

Substances: Hexavalent chromium compounds		
All inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances Metal chromium and chromium contained in alloys are excluded from the targets.		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page 13.)	Banned since the establishment of this Standard
	- Constituents of parts or materials (e.g. inks, paints, additives, etc.) - Residues in the surfaces of screws, steel sheets, etc. that are processed with plating or conversion coating	Banned since January 1, 2005

Substances: Polychlorinated biphenyls (PCB), polychlorinated naphthalenes (PCN), polychlorinated terphenyls (PCT)		
Targets		Effective date of the ban on the delivery
Level 1	- All uses (e.g. capacitors, lubricants, insulating oils, transformers containing oil, paints, and flame retardants in plastics)	Banned since the establishment of this Standard

Substances: Chlorinated paraffins (CP)		
Short-chain chlorinated paraffins with the following characteristics: C10-13, Cl = 48 wt% or more		
Targets		Effective date of the ban on the delivery
Level 1	- The cabinets of products (including accessories) and PWBs	Banned since the establishment of this Standard
	- All uses other than the above	Banned since February 1, 2006

Substances: Other chlorinated organic compounds		
Targets		Effective date of the ban on the delivery
Level 3	- The plasticizers or flame retardants contained in plastics, and the flame retardants used for PWBs	N/A

Substances: Polybrominated biphenyls (PBB)		
Targets		Effective date of the ban on the delivery
Level 1	- All uses (e.g. flame retardants contained in plastics)	Banned since the establishment of this Standard

Substances: Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])		
Targets		Effective date of the ban on the delivery
Level 1	- All uses (e.g. flame retardants contained in plastics)	Banned since the establishment of this Standard
	- The parts manufactured using the molding dies, which were made in or before December 2002 (Applicable only to the bodies of the displays and TV sets shipped to countries and regions other than European ones) The parts whose molding dies have been made since January 2003 must not contain PBDE.	Banned since January 1, 2005

Substances: Other brominated organic compounds		
Targets		Effective date of the ban on the delivery
Level 3	- The flame retardants contained in plastics, or used for PWBs	N/A

Substances: Tributyltin compounds and triphenyltin compounds		
Targets		Effective date of the ban on the delivery
Level 1	- All uses (e.g. paints, inks, preservatives, and fungicides)	Banned since the establishment of this Standard

Substances: Asbestos		
Targets		Effective date of the ban on the delivery
Level 1	- All uses (e.g. insulators and fillers)	Banned since the establishment of this Standard

Substances: Specific azo compounds		
Targets		Effective date of the ban on the delivery
Level 1	The following substances, which are used in parts or articles that may come into direct and prolonged contact with the human skin (e.g. belts, straps, ear phones, head phones, and shoulder pads for bags): - Azodyes that form any of the amine compounds listed in Table 4.2a through the decomposition methods cited in the EU Directive 76/769/EEC - Amine compounds in Table 4.2a	Banned since the establishment of this Standard
Level 3	The following substances, which are used in parts or articles that do not come into continuous contact with the human skin (e.g. cushions, mice, remote commanders, and carrying bags): - Azodyes that form any of the amine compounds listed in Table 4.2a through the decomposition methods cited in the EU Directive 76/769/EEC - Amine compounds in Table 4.2a	N/A
<p>Test methods (for reference)</p> <p>The methods for decomposing azo compounds and then extracting amines are as follows:</p> <ol style="list-style-type: none"> <li>1) EN 14362-1:2003, "Textiles-Methods for the determination of certain aromatic amines derived from azocolorants -Part 1: Detection of the use of certain azocolorants accessible without extraction";</li> <li>2) CEN ISO/TS 17234:2003, "Leather-Chemical tests–Determination of certain azocolorants in dyed leathers"; and</li> <li>3) EN 14362-2:2003, "Textiles-Methods for the determination of certain aromatic amines derived from azocolourants -Part 2: Detection of the use of certain azocolorants accessible by extracting the fibres."</li> </ol>		

**Table 4.2a List of specific amine compounds**

CAS No.	Amine compounds
92-67-1	4-aminodiphenyl
92-87-5	benzidine
95-69-2	4-chloro-o-toluidine
91-59-8	2-naphthylamine
97-56-3	o-aminoazotoluene
99-55-8	2-amino-4-nitrotoluene
106-47-8	p-chloroaniline
615-05-4	2,4-diaminoanisole
101-77-9	4,4'-diaminodiphenylmethane
91-94-1	3,3'-dichlorobenzidine
119-90-4	3,3'-dimethoxybenzidine
119-93-7	3,3'-dimethylbenzidine
838-88-0	3,3'-dimethyl-4,4'-diaminodiphenylmethane
120-71-8	p-cresidine
101-14-4	4,4'-methylene-bis-(2-chloroanilene)
101-80-4	4,4'-oxideaniline
139-65-1	4,4'-thiodianiline
95-53-4	o-toluidine
95-80-7	2,4-toluylenediamine
137-17-7	2,4,5-trimethylaniline
90-04-0	o-anisidine
60-09-3	4-aminoazobenzene

Substance: Formaldehyde		
Targets		Effective date of the ban on the delivery
Level 1	- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for import into Europe (e.g. speakers and racks)	Banned since the establishment of this Standard
	- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for destinations other than Europe (e.g. speakers, racks)	Banned since January 1, 2005
<p>Reference value (emission content): Obtain the value by any one of the following methods.</p> <p>1) [With a chamber method] Concentration in the air: Equal to or less than 0.1 ppm (or 0.124 mg/m<sup>3</sup>) in an air-tight test chamber whose volume is 12 m<sup>3</sup>, 1 m<sup>3</sup>, or 0.0225 m<sup>3</sup></p> <p>2) [With a perforator method] - Equal to or less than 6.5 mg in 100 g of a particleboard without a surface treatment (the average value during six months) - Equal to or less than 7.0 mg in 100 g of a fiberboard without a surface treatment (the average value during six months) - Equal to or less than 8.0 mg in 100 g of a particleboard/fiberboard without a surface treatment (the value derived from the one-time measurement based on EN120)</p> <p>3) [With a desiccator method] - Average content: 0.5 mg/l or less - Maximum content: 0.7 mg/l or less (Use N=2 to check the average and maximum values.)</p>		
<p>Measurement methods:</p> <ul style="list-style-type: none"> <li>- A chamber method specified in EN 717-1:2004 (Wood based panels; determination of formaldehyde release; formaldehyde emission by the chamber method)</li> <li>- A perforator method specified in EN 120 (Wood based panels; determination of formaldehyde content; extraction method called perforator method; EN 120:1992)</li> <li>- A desiccator method specified in JIS A 5905 (Fibreboards) and JIS A 5908 (Particleboards)</li> </ul>		

Substances: Polyvinyl chloride (PVC) and PVC blends		
Targets		Effective date of the ban on the delivery
Level 1	- Substrates for FeliCa contactless IC cards * For reference, the targets have never contained PVC or PVC blends.	Banned since before the establishment of this Standard
	- Coating agents and fabrics for the carrying bags, carrying cases, and carrying pouches, which are designed for use with personal computers, digital cameras, camcorders, and portable audio products (excluding those for professional use)	Banned since the establishment of this Standard
	- Vinyl ties made of PVC or PVC blends	Banned since July 1, 2002
	- Packaging materials to protect, contain, or transport products or supplied accessories (e.g. bags, tapes, cartons, and blister packs)	Banned since January 1, 2005
	- Heat shrink tubes	Banned since April 1, 2005
Level 2	- Sheets and laminates used for the exterior of wooden speakers - Insulating plates, decorative panels, labels, sheets, and laminates - Connection cords for wearable equipment (e.g. cables for ear phones, head phones, and ear microphones) - Flexible flat cables (FFC)	April 1, 2007

Substances: Polyvinyl chloride (PVC) and PVC blends		Effective date of the ban on the delivery
Level 3	<ul style="list-style-type: none"> <li>- Coating for insulation and protection used for the inside or outside of devices, insulating tubes, carrying belts, spacers, holders, covers, ducts, etc.</li> <li>- Power supply cords (including ones with some or all of the following: plugs, connectors, or cord bushes) designed for use in Japan, the U.S., and Canada (2P and 3P)</li> <li>- Parts consisting of wires (e.g. connectors with cords) and wires used for internal wiring (e.g. motor leads)</li> <li>- Connection cords (e.g. connection cords for USB or i.LINK, and video cords, AC adaptors secondary leads, flat wires, multi cables, speaker cords, etc.)</li> <li>- Harnesses and processing wires designed by Sony (e.g. coaxial cables, flat wires, double insulation wires, and shielded wires)</li> <li>- Coating agents and fabrics for the carrying bags, carrying cases, and carrying pouches, which are designed for exclusive use with professional-electronics products</li> <li>- Developing papers</li> <li>- Insulation caps for capacitors, power supply switches, and fuses</li> <li>- Trays, magazine sticks, reels, embossed carrier tapes used by parts suppliers for parts packaging</li> <li>- Suction cups for mounting in-vehicle products</li> <li>- Other parts except those classified into Levels 1 and 2, and Exemption</li> </ul>	N/A
Exemption	<ul style="list-style-type: none"> <li>- Binder for resins</li> <li>- Polyvinyl electrical wires for high voltage</li> <li>- Insulating tapes</li> <li>- Speaker grilles</li> <li>- Power supply cords designed for use in countries and regions other than Japan, the U.S., and Canada</li> <li>- Parts that are not classified into Levels 1; 2; and 3, and are composed of vinyl chloride copolymers or blends of PVC and other polymers</li> <li>- Transformer leads whose joint is fixed by varnish impregnation</li> <li>- Curl cords</li> <li>- Extra fine electrical wires that are AWG (American Wire Gauge) 36 or more</li> <li>- Use of PVC and PVC blends in the professional-use cables for which general-purpose ones cannot be substituted (e.g. cables for broadcast cameras and microphone cables)</li> </ul>	N/A

**4.2 Additional rules for packaging materials**

**4.2.1 Definition of “packaging materials”**

Packaging materials are defined as products made from any materials of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods from the producer to the user or consumer.

Note: The definition excludes the materials for the returnable boxes, which are reused or recycled under the control of carriers or parts suppliers, and are not disposed of by consumers or Sony.

**Table 4.3 Additional rules for packaging materials**

Substances: Heavy metals (cadmium, lead, mercury, and hexavalent chromium)		
Articles that satisfy not only the rules specified in Table 4.2, but also the following conditions determined by the regulations of relevant laws		
Targets		Effective date of the ban on the delivery
Level 1	- All packaging materials Some examples are given in PACKAGING of Table 4.3a.	Banned since the establishment of this Standard
Exemption	- Cartons for returnable boxes owned by parts suppliers	N/A
<p>Allowable concentrations</p> <p>- “Less than 100 ppm” is determined as the allowable total-concentration of four heavy metals (cadmium, lead, mercury, and hexavalent chromium) contained in each part, ink, or paint that constitutes a package. Regarding allowable concentrations of cadmium and lead contained in plastics (including rubber), paints, and inks, however, regulations for “Cadmium and cadmium compounds” and “Lead and lead compounds” must also be satisfied.</p> <p>(Typical plastic parts: handles, cushions, films, reels, tapes, magazine sticks [including stoppers], polyvinyl bags, binding ties, and trays)</p>		
<p>For hexavalent chromium:</p> <ol style="list-style-type: none"> <li>1) First analyze total chromium content and verify that the total concentration of cadmium, lead, mercury and total chromium is less than 100 ppm. When analyzing, the same preconditioning methods as those used for cadmium and lead are applicable.</li> <li>2) If this total concentration is more than 100 ppm, verify that the sum of the cadmium, lead and mercury concentration is less than the 100 ppm limit.</li> <li>3) Analyze and confirm that no hexavalent chromium is present, using the standard methods for detecting hexavalent chromium provided on page 14.</li> </ol> <p>Standards for four heavy metals measurement</p> <ol style="list-style-type: none"> <li>1) Preconditioning For cadmium and lead, follow the methods respectively specified on pages 5 and 7. For total chromium, follow the methods specified on page 5. For mercury, typical test methods are as follows:                     <ol style="list-style-type: none"> <li>(1) A pressurized acid decomposition method done in a sealed container (a microwave decomposition method [e.g. EPA 3052:1996]);</li> <li>(2) A heating evaporation-cold-vapor mercury-atomic-absorption method (Full-automatic test equipment is marketed.); and</li> <li>(3) A wet decomposition method (e.g. Kjeldahl method) in which a decomposition flask with a reflux condenser is used to decompose mercury by sulfuric acid or nitric acid.</li> </ol> <p>Note: In the process of preconditioning, particular attention is required to avoid mercury sublimation, and precipitates must be completely dissolved by some technical means.</p> </li> <li>2) Measurement methods Regarding the measurement of cadmium; lead; and total-chromium concentrations, follow the methods specified on pages 5 and 7. Regarding the measurement of mercury concentrations, follow the methods on the above pages, too. When the mercury concentration is predicted to be low, you are advised to use one of the following methods:                     <ol style="list-style-type: none"> <li>(1) A reduction-evaporation atom-absorption method,</li> <li>(2) ICP-AES (ICP-OES) method with a hydride-generation apparatus; and</li> <li>(3) ICP-MS method with a hydride-generation apparatus.</li> </ol> </li> </ol>		



Standard methods for detecting hexavalent chromium:

Note: Standard methods specified hereafter are applicable when total concentration of the four elements of cadmium, lead, mercury, and total chromium in packaging materials is 100 ppm or more.

Detection methods:

- 1) Preconditioning
    - Extraction methods such as boiling water extraction and alkaline extraction (e.g. EPA 3060A)
  - 2) Measurement method
    - Ultraviolet-Visible (UV/VIS) Spectroscopy (e.g. EPA 7196A)
- If a combination of a preconditioning method and a measurement method can guarantee the following limits of quantification, the combination is also available:
- (1) Less than 5 ppm for mercury;
  - (2) Less than 5 ppm for cadmium;
  - (3) Less than 5 ppm for the total chromium; and
  - (4) Less than 30 ppm for lead.
- Cadmium, lead, and total chromium can be simultaneously analyzed by each of the measurement methods (except for AAS).

**Table 4.3a Illustrative examples of PACKAGING materials and NOT PACKAGING materials**

Note: The following lists provide some examples of the products, which we categorize as “packaging” as well as “not packaging,” to serve as a reference. They are not intended to include all products in both categories.

For consumer- and professional-electronics products (used for transporting Sony electronics products)		
PACKAGING		
1.	Carton	Including master carton and sub-master carton made from any materials.
2.	Cushion	
3.	Protection bag, protection sheet	Such as made from foamed plastic or nonwoven fabric
4.	Plastic bag	
5.	Envelope	Such as used for warranty card
6.	Blister pack	
7.	Film	Including protection films such as used for the LCD displays
8.	Clamshell	
9.	Separator, spacer, partition	
10.	Printing ink	Used for packaging
11.	Adhesive tape	Such as used for closing carton or poly bag, or, fixing or protection for removable component
12.	Staple	
13.	Label	Sticked on the packaging component under control of Sony, such as bar-code label
14.	Joint	Carton joint
15.	Binding band	Such as PP band
16.	Hanging tab	
17.	Carrying handle	Including its related components
18.	Crate	Such as wooden frame
19.	Shrink film	
20.	Bottle	
21.	Sleeve	
22.	Jewel box	Such as packaging for fountain pen
23.	Skid	

NOT PACKAGING		
1.	CD case, CD bag	Cases or bags such as used for video tape, MD, MO, DVD and spindle case which are defined as part of product.
2.	Inlay card, inlay label	Such as index-card or label for CD and other recording media
3.	Carrying case, carrying pouch	Such as used for headphones, camera, and WALKMAN®, which are defined as part of products.
4.	Label	Sticked on except packaging item
5.	Label	Sticked by third parties such as cargo label and/or invoice

For devices, semiconductors, and any other components		
PACKAGING		
1.	Magazine stick	Such as used for IC
2.	Stopper	
3.	Tray	
4.	Reel	

For physical distribution		
PACKAGING		
1.	Pallet	Made from wood, plastic, paper, etc. which is used in one-way transportation, including slip sheet.
2.	Crate	Such as wooden container
3.	Stretch film	Wrap around palletized unit
4.	Wooden container	
5.	Items used for over packaging	Such as carton, cushion, tape, etc. which is used for component delivery
6.	Band, string	Such as PP band
NOT PACKAGING		
1.	Shipping container, air container	Such as 40 ft container for boat, and air cargo container

### 4.3 Rules for batteries (Applicable to all batteries in commercial distribution)

**Table 4.4 Rules for batteries**

Substances: Heavy metals (cadmium, lead, and mercury)			
All metals, alloys, inorganic compounds, metal-organic compounds, inorganic salts, organic salts, and cadmium-, lead-, and mercury-compounds			
Targets			Effective date of the ban on the delivery
Level 1	Cd	- Adoption of new NiCd batteries	Banned since April 1, 2003
	Pb	- Batteries (excluding small-size sealed lead-acid batteries) and battery packs whose lead content, in proportion to the total weight of each one, is 0.4% or more - Adoption of new small-size sealed lead-acid batteries	Banned since April 1, 2003
		- All small-size sealed lead-acid batteries	Banned since January 1, 2005
	Hg	- Button cell batteries whose mercury content, in proportion to the total weight of each one, is 2% or more - Batteries (excluding button cell batteries) and battery packs whose mercury content, in proportion to the total weight of each one, is 0.0005% or more - Carbon zinc batteries and alkaline batteries designed for use in China whose mercury content, in proportion to the total weight of each one, is 0.0001% or more	Banned since the establishment of this Standard
Level 2	Cd	- All NiCd batteries	January 1, 2007
Exemption	Pb	- Batteries (excluding small-size sealed lead-acid batteries) and battery packs whose lead content, in proportion to the total weight of each one, is less than 0.4% * However, the leaded solder and lead used for plastics (including rubber), paints, and inks for battery packs, which are classified into Level 1, are subject to the corresponding regulations.	N/A
	Hg	- Button cell batteries whose mercury content, in proportion to the total weight of each one, is less than 2% - Batteries (excluding button cell batteries) and battery packs whose mercury content, in proportion to the total weight of each one, is less than 0.0005% - Carbon zinc batteries and alkaline batteries designed for use in China whose mercury content, in proportion to the total weight of each one, is less than 0.0001%	N/A

## APPENDIXES

### 1. MAJOR CONTROLLED SUBSTANCES, AND EXAMPLES OF APPLICABLE LAWS AND REGULATIONS

### 2. DETAILS OF MAJOR CONTROLLED SUBSTANCES (TYPICAL EXAMPLES)

- Cadmium and cadmium compounds
- Lead and lead compounds
- Mercury and mercury compounds
- Hexavalent chromium compounds
- Polychlorinated biphenyls (PCB), polychlorinated naphthalenes (PCN), polychlorinated terphenyls (PCT)
- Chlorinated paraffins (CP)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenylethers (PBDE)
- Tributyltin compounds and triphenyltin compounds
- Asbestos
- Formaldehyde
- Polyvinyl chloride (PVC) and PVC blends

Disclaimer: Appendixes 1 and 2 are illustrative, and Sony Corporation does not warrant or represent that they are exhaustive.

## 1. MAJOR CONTROLLED SUBSTANCES, AND EXAMPLES OF APPLICABLE LAWS AND REGULATIONS

Note: This information is confirmed as of January 2006. The laws and regulations cited herein are subject to change, and it is essential to consult the latest editions of the relevant laws and regulations.

Substances	Laws and regulations
Cadmium and cadmium compounds	European Union. EU Directive 76/769/EEC.
	European Union. EU Directive 91/338/EC.
	European Union. RoHS Directive 2002/95/EC.
	European Union. Batteries Directive 91/157/EEC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Lead and lead compounds	European Union. RoHS Directive 2002/95/EC.
	European Union. Batteries Directive 91/157/EEC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Mercury and mercury compounds	European Union. RoHS Directive 2002/95/EC.
	European Union. Batteries Directive 91/157/EEC.
	China. Regulation on Mercury Content Limitation for Batteries. (English translation by EIA)
	China. Inspection and Management Methods for the Import and Export of Battery Products Containing Mercury. (English translation by EIA)
Hexavalent chromium compounds	European Union. RoHS Directive 2002/95/EC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Polychlorinated biphenyls (PCB) Polychlorinated naphthalenes (PCN) Polychlorinated terphenyls (PCT)	European Union. EU Directive 76/769/EEC.
	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class I.
Short-chain chlorinated paraffins (CP)	Norway. Regulations relating to restrictions on the use, etc. of certain dangerous chemicals.
Polybrominated biphenyls (PBB)	European Union. EU Directive 76/769/EEC.
	European Union. RoHS Directive 2002/95/EC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Polybrominated diphenylethers (PBDE)	European Union. EU Directive 76/769/EEC.
	European Union. RoHS Directive 2002/95/EC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Tributyltin compounds Triphenyltin compounds	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class I and Class II.
Asbestos	Japan. Industrial Safety and Health Law.
	Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV)
Formaldehyde	Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV)
	Denmark. Danish Statutory Order No. 289.
Specific azo compounds	European Union. EU Directive 76/769/EEC.
Heavy metals (lead, cadmium, mercury, and hexavalent chromium)	European Union. EU Directive 94/62/EC on packaging and packaging waste.
	New York State and other 15 states in the United States. Regulations on Heavy Metals in Packaging Materials.

## 2. DETAILS OF MAJOR CONTROLLED SUBSTANCES (TYPICAL EXAMPLES)

### • Cadmium and cadmium compounds

#### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
Cadmium	7440-43-9	Cd	Connection materials, surface treatment NiCd batteries
Cadmium alloys			Low melting point solder, fuses, etc.
Cadmium oxide	1306-19-0	CdO	Pigments, alkaline batteries, and materials for chemical synthesis
Cadmium chloride	10108-64-2	CdCl <sub>2</sub>	Plating bath, the stabilizers used for vinyl chloride
Cadmium sulfide	1306-23-6 8048-07-5	CdS	Pigments, paints, inks, and light receiving elements for semiconductors
Cadmium nitrate	10325-94-7	Cd(NO <sub>3</sub> ) <sub>2</sub>	Coloring agents, batteries, and photographs
Cadmium nitrate tetrahydrate	10022-68-1	Cd(NO <sub>3</sub> ) <sub>2</sub> · 4H <sub>2</sub> O	
Cadmium sulfate	10124-36-4	CdSO <sub>4</sub>	Cadmium standard cells, reagent
Cadmium stearate	2223-93-0	Cd(C <sub>18</sub> H <sub>35</sub> O <sub>2</sub> ) <sub>2</sub>	The stabilizers used for vinyl chloride
Other cadmium compounds			

## • Lead and lead compounds

### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
Lead; metal	7439-92-1	Pb	
Lead / Tin alloy		Pb-Sn	Solder, brazing materials, and electrical connection
Lead (II) oxide	1317-36-8	PbO	Pigments, rubber vulcanization accelerators, and solid lubricants
Lead (IV) oxide	1309-60-0	PbO <sub>2</sub>	Lead-acid batteries, rubber curing agents, and materials for pigments
Dilead trioxide	–	Pb <sub>2</sub> O <sub>3</sub>	
Lead (II, IV) oxide	1314-41-6	Pb <sub>3</sub> O <sub>4</sub>	Pigments, lead-acid batteries, glass, and paints
Lead azide	13424-46-9	PbN <sub>6</sub>	
Lead (II) fluoride	7783-46-2	PbF <sub>2</sub>	Special optical glass, pigments
Lead (II) chloride	7758-95-4	PbCl <sub>2</sub>	
Lead (IV) chloride	13463-30-4	PbCl <sub>4</sub>	
Lead (II) iodide	10101-63-0	PbI <sub>2</sub>	Bronze, printing, and photographs
Lead (II) sulfide	1314-87-0	PbS	Infrared ray detectors in which semiconductor elements are utilized
Lead (II) cyanide	592-05-2	Pb(CN) <sub>2</sub>	Antirust pigments
Lead fluoroborate	13814-96-5	Pb(BF <sub>4</sub> ) <sub>2</sub>	Plating bath, anticorrosive surface treatment
Lead fluosilicate	25808-74-6	PbSiF <sub>6</sub>	Plating bath, lead refinement
Lead nitrate	10099-74-8	Pb(NO <sub>3</sub> ) <sub>2</sub>	Optical glass
Lead carbonate	598-63-0	PbCO <sub>3</sub>	
Lead hydroxycarbonate	1344-36-1	(PbCO <sub>3</sub> ) <sub>2</sub> Pb(OH) <sub>2</sub>	Pigments, vinyl chloride stabilizers
Lead perchlorate	13637-76-8	Pb(ClO <sub>4</sub> ) <sub>2</sub>	
Lead (II) sulfate	7446-14-2 15739-80-7	PbSO <sub>4</sub>	Pigments, rubber compounding ingredients, vinyl chloride stabilizers, and batteries
Lead oxide sulfate	12202-17-4	Pb <sub>4</sub> SO <sub>7</sub>	Pigments
Lead (II) phosphate	7446-27-7	Pb <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	Stabilizers for plastics
Lead thiocyanate	592-87-0	Pb(SCN) <sub>2</sub>	Stain, matches
Lead (II) acetate, trihydrate	6080-56-4	Pb(CH <sub>3</sub> COO) <sub>2</sub> · 3H <sub>2</sub> O	
Lead (II) acetate	301-04-2	Pb(CH <sub>3</sub> COO) <sub>2</sub>	
Lead (IV) acetate	546-67-8	Pb(CH <sub>3</sub> COO) <sub>4</sub>	

Name	CAS No.	Chemical formula	Main purposes
Lead oleate	1120-46-3	$\text{Pb}[\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COO}]_2$	Lubricants, curing agents, etc.
Lead stearate	7428-48-0	$\text{Pb}(\text{C}_{17}\text{H}_{35}\text{COO})_2$	Lubricants, stabilizers for vinyl chloride
Lead (II) metaborate	10214-39-8	$\text{Pb}(\text{BO}_2)_2 \cdot \text{H}_2\text{O}$	Desiccants for paints
Lead metasilicate	11120-22-2; 10099-76-0	$\text{PbSiO}_3$	Ceramics
Lead antimonite	13510-89-9	$\text{Pb}_3(\text{SbO}_4)_2$	Pigments, coloring agents for glass
Lead arsenate (1:1)	7784-40-9	$\text{PbHAsO}_4$	
Lead (II) arsenite	10031-13-7	$\text{Pb}(\text{AsO}_2)_2$	Pesticides
Lead chromate; chrome yellow	1344-37-2	$\text{PbCrO}_4$	Pigments, paints, and inks
Lead molybdate	10190-55-3	$\text{PbMoO}_4$	Pigments
Calcium plumbate	12013-69-3	$\text{Ca}_2\text{PbO}_4$	Oxidizers
Tetramethyl lead	75-74-1	$\text{Pb}(\text{CH}_3)_4$	
Tetraethyl lead	78-00-2	$\text{Pb}(\text{C}_2\text{H}_5)_4$	
Other lead compounds and alloys			



## • Mercury and mercury compounds

### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
Mercury	7439-97-6	Hg	Electrodes, mercury lamps
Mercury alloys; amalgam			
Mercury (I) oxide	15829-53-5	Hg <sub>2</sub> O	
Mercury (II) oxide	21908-53-2	HgO	Mercury cells, preservatives
Mercury (I) chloride	10112-91-1	Hg <sub>2</sub> Cl <sub>2</sub>	Electrodes, pigments
Mercury (II) chloride	7487-94-7	HgCl <sub>2</sub>	Metal etching, batteries, and preservatives
Mercury (II) nitrate	10045-94-0	Hg(NO <sub>3</sub> ) <sub>2</sub>	Felt, catalysts
Mercury (I) sulfate		Hg <sub>2</sub> SO <sub>4</sub>	Batteries
Mercury (II) fulminate	628-86-4	Hg(ONC) <sub>2</sub>	
Mercury (II) acetate	1600-27-7	Hg(CH <sub>3</sub> COO) <sub>2</sub>	
Methylmercury salts	e.g. 22967-92-6	CH <sub>3</sub> HgX; X=Cl, Br, I, OH, etc.	Fungicides
Ethylmercury salts		C <sub>2</sub> H <sub>5</sub> HgX; X=Cl, Br, I, OH, etc.	Preservatives, disinfectants
Propylmercury salts		C <sub>3</sub> H <sub>7</sub> HgX; X=Cl, Br, I, OH, etc.	
Phenylmercury salts		C <sub>6</sub> H <sub>5</sub> HgX; X=Cl, Br, I, OH, etc.	Preservatives, disinfectants
Methoxyethylmercury salts		CH <sub>3</sub> OC <sub>2</sub> H <sub>4</sub> HgX; X=Cl, Br, I, OH, etc.	Disinfectants, fungicides
Dialkylmercury		R <sub>2</sub> Hg; R=alkyl group (C <sub>n</sub> H <sub>2n+1</sub> )	
Diphenylmercury	587-85-9	(C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> Hg	
Other mercury compounds			

### • Hexavalent chromium compounds

Note: Only substances containing hexavalent chromium compounds belong to this category.

Chromium metals; chromium alloys; chromium plating leaving no hexavalent chromium residue on plated surfaces; and trivalent chromium compounds do not fall under this category.

#### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
Chromium (VI) oxide; Chromium trioxide	1333-82-0	$\text{CrO}_3$	Pigments, catalysts, plating, and tanning
Lithium chromate	14307-35-8	$\text{Li}_2\text{CrO}_4$	Corrosion prevention
Sodium chromate	7775-11-3	$\text{Na}_2\text{CrO}_4$	Antirust, tanning
Potassium chromate	7789-00-6	$\text{K}_2\text{CrO}_4$	Pigments, inks, and tanning
Potassium chlorochromate	16037-50-6	$\text{K}[\text{CrO}_3\text{Cl}]$	
Ammonium chromate	7788-98-9	$(\text{NH}_4)_2\text{CrO}_4$	Photographs, catalysts
Copper chromate	13548-42-0	$\text{CuCrO}_4$	Mordants
Magnesium chromate	13423-61-5	$\text{MgCrO}_4$	Antirust, surface treatment
Calcium chromate	13765-19-0	$\text{CaCrO}_4$	Pigments, inks, and tanning
Strontium chromate	7789-06-2	$\text{SrCrO}_4$	Pigments, antirust
Barium chromate	10294-40-3	$\text{BaCrO}_4$	Pigments, corrosion prevention, and coloring agents for ceramics
Lead chromate; Chrome yellow	1344-37-2	$\text{PbCrO}_4$	Pigments, paints, and inks
Zinc chromate	12018-19-8; 13530-65-9; 14018-95-2	$\text{ZnCrO}_4$	Pigments, anticorrosives
Sodium dichromate; Sodium bichromate	10588-01-9	$\text{Na}_2\text{Cr}_2\text{O}_7$	Pigments, photographs, tanning, and corrosion prevention
Potassium dichromate; Potassium bichromate	7778-50-9	$\text{K}_2\text{Cr}_2\text{O}_7$	Pigments, photographs, batteries, plating, and tanning
Ammonium dichromate; Ammonium bichromate	7789-09-5	$(\text{NH}_4)_2\text{Cr}_2\text{O}_7$	Pigments, photographs, and catalysts
Calcium dichromate; Calcium bichromate	14307-33-6	$\text{CaCr}_2\text{O}_7$	Catalysts, corrosion prevention
Zinc dichromate; Zinc bichromate		$\text{ZnCr}_2\text{O}_7$	Pigments
Other hexavalent chromium compounds			

• **Polychlorinated biphenyls (PCB), polychlorinated naphthalenes (PCN), polychlorinated terphenyls (PCT)**

1. Examples

Name	CAS No.	Chemical formula	Main purposes
PCB; Polychlorinated biphenyls	1336-36-3	$C_{12}H_{10-x}Cl_x$ ( $x = 1 - 10$ )	Lubricants, heating mediums, and oils for capacitors
PCN; Polychlorinated naphthalenes		$C_{10}H_{8-x}Cl_x$ ( $x \geq 3$ )	Lubricants, preservatives, and paints
Trichloronaphthalenes	1321-65-9	$C_{10}H_5Cl_3$	
Tetrachloronaphthalenes	1335-88-2	$C_{10}H_4Cl_4$	
Pentachloronaphthalenes	1321-64-8	$C_{10}H_3Cl_5$	
Octachloronaphthalenes	2234-13-1	$C_{10}Cl_8$	
PCT; Polychlorinated terphenyls	61788-33-8	$C_{18}H_{14-x}Cl_x$ ( $x = 1 - 14$ )	Lubricants, preservatives, and paints

• **Chlorinated paraffins (CP)**

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Short-chain Chlorinated paraffins C10-13, Cl $\geq$ 48 wt%	e.g. 85535-84-8		Plasticizers, flame retardants

• **Polybrominated biphenyls (PBB)**

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Polybrominated biphenyls; PBB	e.g. 67774-32-7	$C_{12}H_{10-x}Br_x$ ( $x = 1 - 10$ )	Flame retardants

• **Polybrominated diphenylethers (PBDE)**

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Polybromodiphenyl ether; Polybromodiphenyloxiide; Polybrominated biphenyl ethers; PBDE; PBDO; PBBE		$C_{12}H_{10-x}Br_xO$ ( $x = 1 - 10$ )	Flame retardants
Decabromodiphenyl ether; Decabromodiphenyloxiide; DBDE; DecaBDE; DBDPE; DBDPO	1163-19-5	$C_{12}Br_{10}O$	Flame retardants (for PE, ABS, and polyester)
Octabromodiphenyl ether; Octabromodiphenyloxiide; OBDE; OctaBDE	32536-52-0	$C_{12}H_2Br_8O$	Flame retardants (for ABS, HIPS, and LDPE)
Hexabromodiphenyl ether; Hexabromodiphenyloxiide	36483-60-0	$C_{12}H_4Br_6O$	Flame retardants
Pentabromodiphenylehter; Pentabromodiphenyloxiide; PentaBDE	32534-81-9	$C_{12}H_5Br_5O$	Flame retardants

• **Tributyltin compounds and triphenyltin compounds**

Note: Only tributyltin compounds and triphenyltin compounds belong to this category.

Dibutyltin compounds, diphenyltin compounds, metal tin, tin alloys, tin plating, and tin inorganic compounds do not fall under this category.

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Tributyltin bromide	1461-23-0	$(C_4H_9)_3SnBr$	Disinfectants
Tributyltin oxide; Bis (tributyltin) oxide; Distannoxane, hexabutyl-	56-35-9	$C_{24}H_{54}OSn_2$	Disinfectants
Triphenyl tin	668-34-8	$(C_6H_5)_3Sn$	Disinfectants
Triphenyltin chloride; Fentin chloride; Stannane, chlorotriphenyl-	639-58-7	$(C_6H_5)_3SnCl$	Disinfectants
Triphenyltin hydroxide; Fentin hydroxide; Stannane, hydroxytriphenyl-	76-87-9	$(C_6H_5)_3SnOH$	Disinfectants
Triphenyltin N, N' -dimethyldithiocarbamate; Stannane, [[(dimethylamino) thiomethyl] thio] triphenyl-	1803-12-9	$(C_6H_5)_3Sn(CH_3)_2NCS_2$	
Triphenyltin fluorid; Fentin fluoride	379-52-2	$(C_6H_5)_3SnF$	
Triphenyltin acetate; Fentin acetate; Stannane, (acetyloxy) triphenyl-	900-95-8	$(C_6H_5)_3SnOCOCH_3$	
Triphenyltin fatty acid salts Note: The triphenyltin fatty acid salts specified here are limited to those with a 9-, 10-, or 11-carbon chain.	18380-71-7 18380-72-8 47672-31-1 94850-90-5		

Name	CAS No.	Chemical formula	Main purposes
Triphenyltin chloroacetate; (chloroacetoxy) triphenylstannane	7094-94-2	$(C_6H_5)_3SnOCOCH_2Cl$	
Tributyltin methacrylate; Tributyl (methacryloyloxy) stannane; Stannane, tributyl [(2-methyl-1-oxo-2-propenyl) oxy]-	2155-70-6	$(C_4H_9)_3SnC_4H_5O_2$	
Bis (tributyltin) fumarate	6454-35-9 24291-45-0	$C_2H_2(COO)_2$ $([C_4H_9]_3Sn)_2$	
Tributyltin fluoride	1983-10-4 7304-48-5	$(C_4H_9)_3SnF$	
Bis (tributyltin) 2, 3-dibromosuccinate	31732-71-5 56323-17-2	$([C_4H_9]_3Sn)_2C_2H_2$ $(BR)_2(COO)_2$	
Tributyltin acetate	56-36-0	$(C_4H_9)_3SnOCOCH_3$	
Tributyltin laurate; Tributyl (lauroyloxy) stannane	3090-36-6	$(C_4H_9)_3SnC_{12}H_{23}O_2$	
Bis (tributyltin) phthalate; [(Phthaloylbis (oxy))] bis (tributylstannane)	4782-29-0	$(C_6H_4)(COO)_2$ $([C_4H_9]_3Sn)_2$	
Tributyltin sulfamate; Stannane, [(aminosulfonyl) oxy] tributyl-	6517-25-5	$(C_4H_9)_3SnSO_3NH_2$	
Bis (tributyltin) maleate	14275-57-1 24291-45-0	$C_{26}H_{56}O_4Sn_2$	
Tributyltin chloride; Tributylchlorostannane; Stannane, tributylchloro-	1461-22-9 7342-38-3	$(C_4H_9)_3SnCl$	

Name	CAS No.	Chemical formula	Main purposes
Mixture of tributyltin cyclopentanecarboxylate and its analogs; Stannane, tributyl-, mono (naphthenoyloxy) derivs.; Tributyltin naphthenate	85409-17-2		
[1R-(1alpha,4a.beta.,4b.alpha.,10a.alpha.)]-tributyl [[[1,2,3,4,4a,4b,5,6,10,10a-decahydro-7-isopropyl-1,4a-dimethyl-1-phenanthryl]carbonyl] oxy] stannane	26239-64-5	$C_{32}H_{56}O_2Sn$	
Octyl acrylate-methyl methacrylate-tributyltin methacrylate copolymer (alkyl; C = 8)	67772-01-4		

### • Asbestos

#### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
Asbestos	1332-21-4; 132207-32-0; 132207-33-1		Insulators, fillers
Crocidolite	12001-28-4	$\text{Na}_2\text{Fe}_5(\text{Si}_8\text{O}_{22})(\text{OH})_2$	Insulators, fillers
Chrysotile	12001-29-5	$\text{Mg}_3\text{Si}_2\text{O}_5(\text{OH})_4$	Insulators, fillers
Amosite	12172-73-5	$(\text{Mg}, \text{Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$	Insulators, fillers
Anthophyllite	77536-67-5	$(\text{Mg}, \text{Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$	Insulators, fillers
Tremolite	77536-68-6	$\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	Insulators, fillers
Actinolite	77536-66-4	$\text{Ca}_2(\text{Mg}, \text{Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	Insulators, fillers

### • Formaldehyde

#### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
Formaldehyde; formalin; formic aldehyde; formol	50-00-0	HCHO	Preservatives, monomer (e.g. phenol resin and melamine resin)

### • PVC and PVC blends

#### 1. Examples

Name	CAS No.	Chemical formula	Main purposes
PVC and PVC blends; Polivinychloride and polivinychloride blends	e.g. 9002-86-2		Vinyl chloride resin



(Note)

This document is subject to change without prior notice, as a result of a revision or modifications on the SS-00259, the Sony Technical Standard titled "Management Regulations for the Environment-related Substances to be Controlled which are included in Parts and Materials."

Management Regulations for the Environment-related Substances to be Controlled which are included in Parts and Materials

SS-00259 for General Use, Fifth Edition

Enforced 2006.02.01

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# 部件和材料中的环境管理物质 管理规定

(SS-00259 第五版 一般公开版)

**SONY**

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## 1. 目的

本技术标准，通过明确构成索尼电子产品的部件或装置等内所含环境管理物质中的禁止使用物质、计划全废物质以及适用对象外项目，以实现防止混入索尼电子产品、同时遵守法令、保护地球环境以及减轻对生态系统影响的目的。

## 2. 适用范围

### 2.1 部件和材料的适用范围

适用于索尼集团以及索尼集团委托设计、制造的产品所包含的部件、材料及其他物品。这些均必须符合本技术标准中规定的标准。

适用部件和材料等

- 半成品（功能单元、模块、板组件等的组装部件等）
- 部件（电气部件、机构部件、半导体器件、印刷电路板、记录媒体、包装材料、包装部件）
- 螺丝
- 附件（遥控指挥器、鼠标、AC 适配器等为设备使用而配套的附属品等）
- 产品所使用的附属材料（胶带、焊接材料、粘结剂等）等构成材料
- 操作说明书
- 修理用部件（已出货产品的修理用部分部件按照另外的通知书执行）
- 在表 4.3a 中所定义的部件交货人发送和保护货物所使用的包装材料

### 2.2 适用产品的范围

- (1) 由索尼集团设计、制造、销售、借与以及发布的索尼电子产品
- (2) 索尼集团委托第三者设计、制造，贴有索尼集团的商标进行销售、借与或发布的索尼电子产品
- (3) 第三者委托索尼集团进行设计、制造的电子产品  
(但是，由该第三者指定的部件、材料除外)

此外，对本技术标准中未明确规定的物质或者其用途，如果各国或当地法令禁止使用或限制使用，则必须遵照其法令执行。

### 3. 术语的定义

本技术标准，对术语作如下定义。

#### (1) 环境管理物质

在部件、装置等所含有物质中，索尼判断对地球环境和人体存在显著影响的物质。

#### (2) 管理级别

按照以下3种管理级别和适用对象外进行管理。

##### (a) 1级

对于该物质及其用途立即禁止使用。

##### (b) 2级

对于该物质及其用途规定一定时期予以禁止。

超过表中规定的日期之后，则不能含在部件及材料中，自到达期限之日起指定为“1级”。

##### (c) 3级

目前虽然没有规定全废的日期目标，但指定了全废的使用部件、材料中含有的物质及其用途。

把被判断为可以确立代替部件、开发材料和代替技术的产品转变为2级，逐步实现全废。

##### (d) 适用对象外

法令规定对象外或在现阶段没有代替技术方案的物质和用途部位。

#### (3) 含有

含有指无论是否有意，所有在产品的部件、设备或使用的材料中添加、填充、混入或粘附的物质（包括在加工过程中无意混入或粘附于产品中的物质）。

但是，对制造半导体器件等使用的掺杂剂（Dopant），虽然是有意添加的，但实质上在半导体设备中仅有极微量残存，这种情况不作为“含有”，而作为“杂质”处理。

#### (4) 杂质

杂质指包含在天然材料中，作为工业材料使用，在精制过程中技术上不能完全去除的物质（natural impurity），或者合成反应过程中产生，而在技术上不能完全去除的物质。

为了与主原料加以区别，在为了改变材料的特性而使用称为“杂质”的物质时，按照“含有”处理。

（注）对于本技术标准中指定的允许浓度，在部件、装置中该环境管理物质作为杂质混入或者粘附时，其浓度不应超过该允许浓度。

#### (5) 禁止供货时期

部件和材料禁止向索尼供货的时期

#### (6) SS-00259 中的塑料

— 合成高分子物质形成的材料或素材 —

由合成高分子生成的纤维、薄膜、胶带、成形产品、合成橡胶产品、植物原料塑料、粘结剂等。

\*天然树脂与上述合成高分子物质合成时，也按照塑料处理。

## 4. 环境管理物质的管理标准

## 4.1 环境管理物质

本技术标准中作为对象的环境管理物质名称

表 4.1 环境管理物质名称一览

物质名称	
重金属	镉以及镉化合物
	铅以及铅化合物
	汞以及汞化合物
	六价铬化合物
有机氯化物	聚氯联苯 (PCB)
	聚氯化萘 (PCN)
	聚氯三联苯 (PCT)
	氯代烷烃 (CP)
	其他有机氯化物
有机溴化合物	聚溴联苯 (PBB)
	包含十溴联苯醚 (DecaBDE) 的聚溴二苯醚 (PBDE)
	其他有机溴化合物
三丁基锡化合物	
三苯基锡化合物	
石棉	
特定偶氮化合物	
甲醛	
聚氯乙烯 (PVC) 以及 聚氯乙烯混合物	

表 4.2 环境管理物质的主要对象和禁止供货时期

物质名称：镉以及镉化合物		
说明：金属、合金、无机化合物、有机化合物、无机盐、有机盐等含有镉元素的所有物质为对象范围		
对象		禁止供货时期
1 级	<ul style="list-style-type: none"> <li>• 包装部件（参照 P. 14） 【把手、塑料袋、胶垫、绳索、箔、托架、导轨、送料杆（包括止动器）、胶卷盒、带、捆绑带、涂料、墨水等】</li> <li>• 塑料（包括橡胶）材料中使用的稳定剂、颜料、染料 （电气连线的绝缘体、遥控指挥器键、捆绑带、电子部件的外装树脂、外框、标签、唱片等）</li> <li>• 涂料、墨水</li> <li>• 表面处理（电镀、无电解电镀等）、涂层</li> <li>• 照片胶卷</li> <li>• 日光灯（小型日光灯、直管日光灯）</li> </ul>	立即执行
	2 级、适用对象外的所有用途。 例如， <ul style="list-style-type: none"> <li>• 直流电动机、开关、继电器、断路器等电接点</li> <li>• 温度保险丝的可熔体</li> <li>• 玻璃以及玻璃涂料的颜料、染料（用于玻璃的颜料、染料以及玻璃用涂料）</li> <li>• 焊锡（镉含量为 20 ppm 以上的焊锡）</li> <li>• 荧光显示装置中含有的荧光体、CdS 光导电池单元</li> <li>• 电阻（玻璃料）</li> </ul> 等	立即执行 (从 2005 年 1 月 1 日开始)
	含锌金属（黄铜、熔融镀锌等）构成的部件、部位，镉的含量超过 100 ppm 的产品	立即执行 (从 2005 年 10 月 1 日开始)
适用对象外	<ul style="list-style-type: none"> <li>• 要求使用可靠性高的电接点电镀而没有替代材料的产品</li> <li>• 光学玻璃、滤光玻璃</li> </ul>	



<p>允许浓度： 5 ppm 以下；【测定对象：塑料（包括橡胶）、涂料、墨水】</p> <p>测定标准：</p> <p>(1) 预处理</p> <p>有关预处理方法主要有下列 4 种：</p> <ol style="list-style-type: none"> <li>1. 硫酸存在下的灰化法</li> <li>2. 在密闭容器中的加压酸分解法（包括微波分解法(例如 EN 13346:2000 或 EPA 3052:1996)）</li> <li>3. 采用硝酸、过氧化氢、盐酸的酸分解法（例如 EPA3050B Rev. 2:1996）</li> <li>4. 采用硫酸、硝酸、过氧化氢的湿式分解法（例如 BS EN1122: 2001)等。</li> </ol> <p>※ 在上述所有之中，发生沉淀物（不溶物）时，必须采用任何方法（碱溶融法等）使其完全溶解制成溶液。</p> <p>(2) 测定法</p> <p>有关测定方法主要有下列 3 种：</p> <ol style="list-style-type: none"> <li>1. 感应等离子体发光分光分析装置[ICP-AES(ICP-OES)]。例如 EN ISO 11885: 1998</li> <li>2. 原子吸光分析装置(AAS) ;例如 EN ISO 5961: 1995</li> <li>3. 感应等离子体质量分析装置(ICP-MS)</li> </ol> <p>· 除以上之外，通过预处理和测定装置的组合，如果可以保证镉的定量下限为 5 ppm 以下时则为正品。此外，镉和铅也可以采用上述 AAS 以外的方法同时进行分析。</p> <p>(注)</p> <p>由 EN 71-3: 1994、ASTM F963-96a、ASTM F963-03、ASTM D 5517、ISO 8124-3 所代表的溶出法不适用于预处理。</p> <p>工业排水试验法(JIS K0102)的 55 项仅为测定法，因此必须同时记述预处理的方法。</p>
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物质名称：铅以及铅化合物		
说明：金属、合金、无机化合物、有机化合物、无机盐、有机盐等包含铅元素的所有物质为对象范围		
	对象	禁止供货时期
1 级	<ul style="list-style-type: none"> <li>· 包装材料（参照 P. 14）</li> <li>· 用于印刷电路板而使用铅的涂料、墨水</li> </ul>	立即执行
	<ul style="list-style-type: none"> <li>· 部件的外部电极、引线端子等的表面处理（电气部件 / 半导体设备 / 散热片等）</li> <li>· AC 适配器、电源电缆、连接电缆、遥控指挥器、鼠标、设备外露部分中使用的塑料（包括橡胶）材料中的稳定剂、颜料、染料</li> <li>· 机器外露部位中使用的涂料、墨水</li> </ul>	立即执行 (从 2004 年 4 月 1 日开始)
	3 级、适用对象外项目以外的所有用途。 例如， <ul style="list-style-type: none"> <li>· 部件的外部电极、引线端子等的表面处理中 AC 适配器、遥控指挥器、半导体设备等内装的部件</li> <li>· 铅为 85 wt%以下的有铅焊锡中，所含有的铅的含量超过 1000 ppm 的产品。</li> <li>· 含有超过允许浓度 (*1) 的各种合金（包括焊锡材料）</li> <li>· AC 适配器、电源电缆、连接电缆、遥控指挥器、鼠标、设备的外露部分以外所使用的塑料（包括橡胶）材料中的稳定剂、颜料、染料</li> <li>· 机器外露部位以外使用的涂料、墨水</li> </ul> 等	立即执行 (从 2005 年 1 月 1 日开始)
	<ul style="list-style-type: none"> <li>· 使用无电解镀镍、无电解镀金时，电镀膜中的铅含量超过 1000 ppm 的部件</li> </ul>	立即执行 (从 2006 年 2 月 1 日开始)

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3 级	<ul style="list-style-type: none"> <li>使用无电解镀镍、无电解镀金时，电镀膜中的铅含量未超过 1000 ppm 的部件</li> </ul>											
适用对象外	<ul style="list-style-type: none"> <li>部件、设备的连接用高熔点焊锡（铅为 85 wt% 以上的有铅焊锡）</li> <li>电子陶瓷部件【压电元件，陶瓷感应材料、磁性材料(铁氧体)】</li> <li>光学玻璃、滤光玻璃</li> <li>显像管、电子部件、荧光显示管所使用的玻璃材料 电子部件中使用的玻璃材料，包括电阻、导电浆(银浆、铜浆)、粘结剂、玻璃料、密封材等。</li> <li>用于连接微处理器端子和器件封装的焊锡中由 2 种以上的元素组成，铅的含量为 80 wt%以上 85 wt%以下的焊锡。</li> <li>连接 Flip Chip 器件封装内部的半导体芯片和连接电路板的焊锡(包括 C4 焊锡球下的焊锡浆)。</li> </ul> <p style="text-align: center;">(*1) 各种合金的含铅允许浓度</p> <table border="1" data-bbox="464 734 1257 927"> <thead> <tr> <th>合金的种类</th> <th>含铅允许浓度</th> </tr> </thead> <tbody> <tr> <td>钢材</td> <td>≤0.35 wt%</td> </tr> <tr> <td>铝合金</td> <td>≤0.4 wt%</td> </tr> <tr> <td>铜合金(也包括铸铜、磷青铜)</td> <td>≤4 wt%</td> </tr> <tr> <td>焊锡</td> <td>≤1000 ppm</td> </tr> </tbody> </table>	合金的种类	含铅允许浓度	钢材	≤0.35 wt%	铝合金	≤0.4 wt%	铜合金(也包括铸铜、磷青铜)	≤4 wt%	焊锡	≤1000 ppm	
合金的种类	含铅允许浓度											
钢材	≤0.35 wt%											
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铜合金(也包括铸铜、磷青铜)	≤4 wt%											
焊锡	≤1000 ppm											

<p>允许浓度： 100 ppm 以下；【测定对象：塑料（包括橡胶）、涂料、墨水】</p> <p>测定标准：</p> <p>(1) 预处理</p> <p>有关预处理方法主要有下列 4 种：</p> <ol style="list-style-type: none"> <li>1. 硫酸存在下的灰化法</li> <li>2. 在密闭容器中的加压酸分解法（包括微波分解法(例如 EN 13346:2000 或 EPA 3052:1996)）</li> <li>3. 采用硝酸、过氧化氢、盐酸的酸分解法（例如 EPA3050B Rev. 2:1996）</li> <li>4. 采用硝酸、过氧化氢的湿式分解法等。</li> </ol> <p>※在上述所有之中，发生沉淀物（不溶物）时，必须采用任何方法（碱熔融法等）使其完全溶解制成溶液。</p> <p>(2) 测定法</p> <p>有关测定方法主要有下列 3 种：</p> <ol style="list-style-type: none"> <li>1. 感应等离子体发光分光分析装置[ICP-AES(ICP-OES)]；例如 EN ISO 11885: 1998</li> <li>2. 原子吸光分析装置(AAS)；例如 EN ISO 5961: 1995</li> <li>3. 感应等离子体质量分析装置(ICP-MS)</li> </ol> <p>· 除以上之外，通过预处理和测定装置的组合，如果可以保证铅的定量下限为 30 ppm 以下时则为正品。此外，镉和铅也可以采用上述 AAS 以外的方法同时进行分析。</p> <p>(注)</p> <p>EN 71-3:1994、ASTM F963-96a、ASTM F963-03、ASTM D 5517、ISO 8124-3 所代表的溶出法不适用于预处理。另外，EN 1122 也不适用于对铅的预处理法。</p> <p>工业排水试验法(JIS K0102)的 54 项仅为测定法，因此必须同时记述预处理的方法。</p>
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物质名称：汞以及汞化合物		
说明：金属、合金、无机化合物、有机化合物、无机盐、有机盐等含有汞元素的所有物质为对象范围		
	对象	禁止供货时期
1 级	<ul style="list-style-type: none"> <li>· 包装材料（参照 P. 14）</li> <li>· 涂料、墨水</li> <li>· 计时器</li> <li>· 使用汞作为接点的继电器、开关、传感器</li> <li>· 塑料中的添加剂</li> </ul>	立即执行
	<ul style="list-style-type: none"> <li>· 小型日光灯（液晶背光等）：每一支的含量为 5 mg 以上。</li> <li>· 直管日光灯：每一支的含量为 5 mg 以上。</li> <li>· 适用对象外项目的所有用途</li> </ul>	立即执行 (从 2005 年 1 月 1 日开始)
适用对象外	<ul style="list-style-type: none"> <li>· 小型日光灯、直管日光灯以外的灯（高压汞灯等）</li> <li>· 小型日光灯：每一支的含量为 5 mg 以下。</li> <li>· 直管日光灯：每一支的含量为 5 mg 以下。</li> </ul>	

物质名称：六价铬化合物		
说明：无机化合物、有机化合物、无机盐、有机盐等含有六价铬的所有物质为其对象范围。金属铬、合金铬为对象之外。		
对象		禁止供货时期
1 级	· 包装材料（参照 P. 14）	立即执行
	· 涂料、墨水等其他添加剂作为部件、材料的成分而含有的用途 · 电镀、化学合成处理等的表面处理（螺丝、钢板等），残留在被处理部位时	立即执行 （从 2005 年 1 月 1 日开始）

物质名称：聚氯联苯（PCB）、聚氯化萘（PCN）、聚氯三联苯（PCT）		
对象		禁止供货时期
1 级	· 油浸变压器、电容器、绝缘油、润滑油、塑料阻燃剂等所有用途	立即执行

物质名称：氯代烷烃（CP）		
说明：以“碳链长为 10—13、含氯量为 48wt%以上的短链型氯代烷烃”为对象。		
对象		禁止供货时期
1 级	· 包括装饰附件在内的产品外框（机壳）、印刷电路板的用途。	立即执行
	· 上述以外的所有用途。	立即执行 （从 2006 年 2 月 1 日开始）

物质名称：其他有机氯化物		
对象		禁止供货时期
3 级	· 用于塑料的阻燃剂、增塑剂、印刷电路板等上的阻燃剂等用途	

物质名称：聚溴联苯（PBB）		
对象		禁止供货时期
1 级	· 用于塑料的阻燃剂等所有用途	立即执行

物质名称：包含十溴联苯醚(DecaBDE)的聚溴二苯醚（PBDE）		
对象		禁止供货时期
1 级	· 塑料的阻燃剂等所有用途	立即执行
	· 使用 2002 年 12 月以前的模具制造的部件（限于向欧洲以外出口的 TV、显示器的框体） 2003 年 1 月以后的新型模具部件将禁止采用	立即执行 (从 2005 年 1 月 1 日开始)

物质名称：其他有机溴化合物		
对象		禁止供货时期
3 级	· 用于塑料的阻燃剂、印刷电路板等上的阻燃剂等用途	

物质名称：三丁基锡化合物、三苯基锡化合物		
对象		禁止供货时期
1 级	· 涂料、墨水、防腐剂、防锈剂等所有用途	立即执行

物质名称：石棉		
对象		禁止供货时期
1 级	· 绝缘材、填料等所有用途	立即执行

物质名称：特定偶氮化合物		
对象		禁止供货时期
1 级	<ul style="list-style-type: none"> <li>对于按照 76/769/EEC 中引用的试验法进行分解，会产生表 4.2a 所示胺的偶氮化合物、以及表 4.2a 的胺，适用于与人体持续接触产品的接触人体部分（入耳式耳机、头戴式耳机、肩包的肩垫、皮带、绳索等）的颜料。</li> </ul>	立即执行
3 级	<ul style="list-style-type: none"> <li>对于按照 76/769/EEC 中引用的试验法进行分解，会产生表 4.2a 所示胺的偶氮化合物、以及表 4.2a 的胺，适用于不与人体持续接触的部位（遥控指挥器、胶垫、载运框、鼠标等）</li> </ul>	
<p>试验法（参考）</p> <p>分解偶氮化合物、萃取胺的方法有：</p> <p>EN 14362-1: 2003 „Textiles-Methods for the determination of certain aromatic amines derived from azocolourants</p> <p>- Part 1: Detection of the use of certain azocolorants accessible without extraction “</p> <p>CEN ISO/TS 17234:2003 „Leather-Chemical tests - Determination of certain azocolorants in dyed leathers “</p> <p>EN 14362-2: 2003 „Textiles-Methods for the determination of certain aromatic amines derived from azocolourants</p> <p>- Part 2: Detection of the use of certain azocolorants accessible by extracting the fibres”。</p>		

表 4.2a 特定胺化合物一览表

CAS No.	胺
92-67-1	4-氨基苯基苯
92-87-5	对二氨基联苯
95-69-2	4-氯-o-甲苯胺
91-59-8	2-萘胺
97-56-3	o-邻氨基偶氮甲苯
99-55-8	2-氨基-4-四硝基甲苯
106-47-8	p-氯苯胺
615-05-4	2,4-二氨基甲氧基苯甲醚
101-77-9	4,4'-二氨基苯化甲烷
91-94-1	3,3'-二氯联苯胺
119-90-4	3,3'-二甲氧基联苯胺
119-93-7	3,3'-二甲基联苯胺
838-88-0	3,3'-二甲基-4,4'-二氨基二苯甲烷
120-71-8	p-氨基对甲苯甲醚
101-14-4	4,4'-亚甲基-双-(2-氯苯胺)
101-80-4	4,4'-氧代苯胺
139-65-1	4,4'-硫双苯胺
95-53-4	o-甲苯胺
95-80-7	2,4-甲代苯二胺
137-17-7	2,4,5-三甲苯胺
90-04-0	o-氨基苯甲醚
60-09-3	4-氨基偶氮苯

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物质名称：甲醛		
对象		禁止供货时期
1 级	• 出口欧州产品中的纤维板、木屑板以及胶合板的木工产品（扬声器、机架等）	立即执行
	• 非出口欧州产品中的纤维板、木屑板以及胶合板的木工产品（扬声器、机架等）	立即执行 (从 2005 年 1 月 1 日开始)
<p>标准值（排放浓度）：采用下列方法中的任何方法</p> <p>1) 气密试验室法 空气中浓度 12 m<sup>3</sup>, 用 1m<sup>3</sup>或 0.0225 m<sup>3</sup>的气密试验槽不超过 0.1 ppm(不超过 0.124mg/m<sup>3</sup>)</p> <p>2) 穿孔器法</p> <ul style="list-style-type: none"> <li>• 未经表面处理的木屑板 100g 平均不超过 6.5 mg(6 个月的平均值)</li> <li>• 未经表面处理的纤维板 100g 平均不超过 7.0 mg(6 个月的平均值)</li> </ul> <p>或</p> <p>未经表面处理的木屑板、纤维板 100g 平均不超过 8.0 mg(按照 EN120 的 1 次测定值)</p> <p>3) 干燥器法 平均不超过 0.5 mg/l、最大不超过 0.7 mg/l (用 N=2 确认平均值、最大值)</p>		
<p>测定法：气密试验室法 EN 717-1:2004 (Wood based panels; determination of formaldehyde release; formaldehyde emission by the chamber method)</p> <p>穿孔器法 EN 120 (Wood based panels; determination of formaldehyde content; extraction method called perforator method; EN 120:1992)</p> <p>干燥器法 JIS A 5905 (Fibreboards)、JIS A 5908 (Particleboards)</p>		

物质名称：聚氯乙烯（PVC）以及聚氯乙烯混合物		禁止供货时期
1 级	<ul style="list-style-type: none"> <li>非接触 IC 卡 (FeliCa) 用基材</li> </ul>	立即执行 (从最初起就不使用)
	<ul style="list-style-type: none"> <li>计算机、数码相机、摄像机、便携多媒体播放器所使用的背包、背箱、携带小包的材料和涂装剂 (业务用除外)</li> </ul>	立即执行
	<ul style="list-style-type: none"> <li>捆绑带 (聚氯乙烯制)</li> </ul>	立即执行 (从 2002 年 7 月 1 日开始)
	<ul style="list-style-type: none"> <li>用于产品和与产品一同包装的包装材 (袋、胶带、纸箱、吸塑包装盒等)</li> </ul>	立即执行 (从 2005 年 1 月 1 日开始)
	<ul style="list-style-type: none"> <li>热收缩软管</li> </ul>	立即执行 (从 2005 年 4 月 1 日开始)
2 级	<ul style="list-style-type: none"> <li>用于木制扬声器外装的贴层、层合板</li> <li>绝缘板、装饰板、标签、贴层、层合板</li> <li>连接线 (1)：便携型机器用电缆 (入耳式耳机、头戴式耳机、耳麦用的电缆等)</li> <li>挠性扁平电缆 (FFC)</li> </ul>	从 2007 年 4 月 1 日开始
3 级	<ul style="list-style-type: none"> <li>机器内外部使用的绝缘和保护用的涂层、绝缘软管、传送带、衬垫、支架、护盖、通道等</li> <li>面向日本、美国、加拿大交货的电源线 (包括插头、连接器、电缆卡头)：[2P、3P]</li> <li>带电缆的连接器等使用线材的部件、马达引线等机内布线用线材</li> <li>连接电缆 (2)：USB 用电缆、iLINK 用电缆、录像电缆、AC 适配器次级引线、扁平电线、多芯复合电缆、扬声器电缆等</li> <li>索尼设计的束线、加工线材 (同轴电缆、扁平电线、双重屏蔽电线、铠装线等)</li> <li>业务用电子产品用背包、背箱、携带小包的材料和涂装剂</li> <li>画图纸</li> <li>电容器、电源开关、保险丝用途的绝缘盖</li> <li>部件交货人的部件包装用托盘、料管、带盘、包装卷带等</li> <li>安装车载机器用的吸盘</li> <li>1 级, 2 级以及适用对象外项目的部件</li> </ul>	



适用对象外	<ul style="list-style-type: none"> <li>· 树脂用粘结剂</li> <li>· 高压塑料电线</li> <li>· 绝缘带</li> <li>· 扬声器托架</li> <li>· 电源线（面向 3 级以外的地区交货时）</li> <li>· 1 级、2 级、3 级以外的对象中，使用氯乙烯共聚以及聚氯乙烯与其它 聚合材料混合物的部件</li> <li>· 变压器引线部（清漆浸渍的部分）</li> <li>· 卷线</li> <li>· AWG36 以上的极细电线</li> <li>· 业务用机器中不能使用通用电缆的用途（广播电视台用摄像机电缆、麦克 风电缆等）</li> </ul>	
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## 4.2 有关包装材料的补充事项

## 4.2.1 包装材料的定义

包装材料是指为了将原材料直至加工品从生产者送到使用者或消费者，而由用于“装入”、“保护”、“使用”、“运送”、“交付”的所有种类的全部材料所构成的产品。

注) “在运输公司或交货公司管理下，不由索尼内部或最终用户废弃，而是被回收再使用的运运用箱等的包装除外。”

表 4.3 有关包装材料的追加事项

物质名称：重金属 (镉、铅、六价铬、汞)		禁止供货时期
说明：加上第 4.1 项 (表 4.2) 的规定，根据法律规定，必须符合以下条件		
对象		禁止供货时期
1 级	· 表 4.3a 记述的包装材料为对象	立即执行
适用对象外	· 部件交货人所有的搬运箱属于对象外	
允许浓度： · 汞、镉、六价铬、铅等重金属的允许浓度，按包装的各部件材料、墨水、涂料等，重金属合计为 100 ppm 以下。但是，塑料 (包括橡胶)、涂料、墨水的部位，镉、铅的允许浓度应达到镉和镉化合物、铅和铅化合物的规定。 <b>【主要塑料部位：把手、塑料袋、防振材料、膜、托架、导轨、胶带、送料杆 (包括止动器)、捆绑带等】</b>		
(1) 对于铬，首先对总铬量进行分析，确认 4 种元素合计是否为 100 ppm 以下。此时，可以与镉和铅同时进行预处理。 (2) 如果 4 种元素合计超过了 100 ppm 时，必需确认镉、铅、水银的合计含量为 100 ppm 以下。 (3) 进而，应对铬是否为六价铬进行检测，最终应确认没有检测到六价铬。		
测定标准： (1) 预处理 关于镉、铅，以塑料种的镉 (P.5)、铅 (P.7) 的方法为准。 对于总铬，以塑料中的铬 (P.5) 的方法为准。 关于汞主要有下列 3 种方法： 1. 闭容器内的加压酸分解法 (包括微波分解法 (例如 EPA 3052:1996)) 2. 加热气化-冷原子吸光法 3. 采用回流冷却器分解烧瓶 (凯尔达鲁法) 的硫酸、硝酸的湿式分解法等。 ※ 必须注意无论采用哪种方法都不能让汞挥发。另外，产生沉淀物时必须采取某种方法使其溶解成为溶液。		
(2) 测定装置 对于镉、铅、总铬，以塑料中的镉 (P.5)、铅 (P.7) 的方法为准。 对于汞，与塑料中的镉 (P.5)、铅 (P.7) 的方法相同，但是如果估计有低浓度混入时，则认为适于采用还原气化原子吸光法、带有氢气发生装置的 ICP-AES (ICP-OES)、ICP-MS 法进行分析。		

## 六价格的检测判定

(※关于包装材料, 镉、铅、汞、总铬的4种元素合计达100 ppm以上时的确认方法)

## 检测方法:

## (1) 预处理

溶出法(沸腾水提取法、碱提取法“例如EPA 3060A”)

## (2) 测定方法

紫外-可见光吸光度法(例如EPA 7196A)

- 如果预处理和测定装置的各种组合, 可以保证定量下限分别为汞5 ppm以下、镉5 ppm以下、总铬5 ppm以下、铅30 ppm以下, 则作为正品。此外, 可以同时采用AAS以外的方法对镉、铅、总铬量进行分析。

表 4. 3a 识别包装材料的具体示例(注)不代表所有情况

用于组合和业务用产品的包装 (用于索尼电子产品运输的包装)		
PACKAGING		
1.	纸箱(箱)	各种材料制成的纸箱、辅助纸箱、主纸箱
2.	防振材料	
3.	防护带(布)	泡沫塑料或不织布等
4.	塑料袋	
5.	信封	装保证书的信封等
6.	吸塑包装盒	
7.	薄膜	包括液晶显示器表面等贴的保护膜
8.	蛤壳状盒	
9.	隔板	
10.	印刷墨水	用于包装材印刷的墨水
11.	胶带	用于纸箱、塑料袋封口, 以及用于可动部分的保护和固定的胶带
12.	固定钉	
13.	标签	条形码标签那样的索尼管理下贴到包装部件上的标签
14.	接头	纸箱接头等
15.	捆绑带	PP带子等
16.	吊件	
17.	拉手	拉手及其构成部件
18.	外框	木框等
19.	收缩膜	
20.	螺栓	
21.	套筒	
22.	装饰箱	相当于钢笔、化妆品的装饰箱
23.	防滑垫	

NOT PACKAGING		
1.	CD 盒子	用于录像带、CD、MO、MD、DVD 等的盒子、袋、筒盒等，被视为产品的一部分
2.	检索卡片	附属于 CD 等记录媒体的检索卡片等
3.	传送盒/袋	附属于耳机、照相机、WALKMAN®播放器等，被视为产品的一部分
4.	标签	贴到包装材料以外的标签
5.	标签	由第 3 者粘贴的货物标签、发票等

用于设备、半导体以及其他部件的包装材料		
PACKAGING		
1.	料管	用于 IC 等的运输用
2.	止动器	
3.	托盘	
4.	带盘	

用于物资流通的包装材料		
PACKAGING		
1.	板条托架	包括防滑板的木制、塑料制、纸制等 One-Way 规格的托架
2.	木框	
3.	弹性膜	防止货物变形等用
4.	木制集装箱	
5.	辅助包装用包装材	用于运输部件用的辅助包装材料等
6.	带或绳	PP 带等
NOT PACKAGING		
1.	轮船和空运集装箱	海运用 40 英尺集装箱、空运集装箱等

## 4.3 有关电池的事项（适用于与产品同时包装和另外出售等所有的商品流通形式）

表 4.4 有关电池的事项

物质名称：重金属 (镉、铅、汞)			
说明：对象范围为金属、合金、无机化合物、有机化合物、无机盐、有机盐等含有镉、铅、汞元素的所有物质。			
对象		禁止供货时期	
1级	Cd	<ul style="list-style-type: none"> <li>作为新部件交货的镍/镉电池。</li> </ul>	立即执行 (从2003年4月1日开始)
	Pb	<ul style="list-style-type: none"> <li>除小型密封铅电池以外的“电池和电池组”，且其含铅量占电池总重量的0.4%以上的电池</li> </ul>	立即执行
		<ul style="list-style-type: none"> <li>作为新部件交货的小型密封铅电池。</li> </ul>	立即执行 (从2003年4月1日开始)
		<ul style="list-style-type: none"> <li>所有的小型密封铅电池。</li> </ul>	立即执行 (从2005年1月1日开始)
	Hg	<ul style="list-style-type: none"> <li>钮扣电池中，其汞含量占电池总重量的2%以上的电池。</li> <li>钮扣电池以外的“电池和电池组”中，其汞含量占电池总重量的0.0005%以上的电池。但是供中国使用的锰电池和碱锰电池为0.0001%以上。</li> </ul>	立即执行
2级	Cd	<ul style="list-style-type: none"> <li>所有的镍、镉电池。</li> </ul>	从2007年1月1日开始
适用对象外	Pb	<ul style="list-style-type: none"> <li>除小型密封铅电池以外的“电池和电池组”，且其铅含量为总重量的0.4%以下的电池。但是，使用于电池组等的塑料（包括橡胶）、涂料、墨水中的铅和有铅焊锡，则适用于1级应按照规定执行。</li> </ul>	
	Hg	<ul style="list-style-type: none"> <li>钮扣电池中，其汞含量为电池总重量的2%以下的电池。</li> <li>钮扣电池以外的“电池和电池组”中，其汞含量为电池总重量的0.0005%以下的电池。但是供中国使用的锰电池和碱锰电池为0.0001%以下。</li> </ul>	

## 附加文档

1. 世界各国和地区就物质使用实施的法律法规（主要示例）
2. 所属物质的详细信息(主要示例)
  - 镉以及镉化合物
  - 铅以及铅化合物
  - 汞以及汞化合物
  - 六价铬化合物
  - 聚氯联苯 (PCB)、聚氯化萘 (PCN)、聚氯三联苯 (PCT)
  - 氯化萘 (CP)
  - 聚溴联苯 (PBB)
  - 聚溴二苯醚 (PBDE)
  - 三丁基锡化合物、三苯基锡化合物
  - 石棉
  - 特定偶氮化合物
  - 甲醛
  - 聚氯乙烯 (PVC) 以及聚氯乙烯混合物

注意事项：此表仅为示例，索尼不保证汇总了全部内容。

## 1. 世界各国和地区就物质使用实施的法律法规（主要示例）

注）以下为截止 2006 年 1 月确认的内容。由于法律规定的内容会有所变动，请参照各国法律规定的最新版确认详细内容。

物质名称	法律法规
镉以及镉化合物	欧盟规程建议（76/769/EEC）
	欧盟各国管制规定（91/338/EC）
	欧盟 欧洲危险物质使用限制规程建议(2002/95/EC)
	欧盟 电池规程建议(91/157/EEC)
	瑞士 关于降低化学物质风险的法令 等
铅以及铅化合物	欧盟 欧洲危险物质使用限制规程建议(2002/95/EC)
	欧盟 电池规程建议(91/157/EEC)
	瑞士 关于降低化学物质风险的法令 等
汞以及汞化合物	欧盟 欧洲危险物质使用限制规程建议(2002/95/EC)
	欧盟 电池规程建议(91/157/EEC)
	中国 关于限制电池产品汞含量的规定
	中国 进出口电池产品汞含量检验监管办法 等
六价铬化合物	欧盟 欧洲危险物质使用限制规程建议(2002/95/EC)
	瑞士 关于降低化学物质风险的法令 等
聚氯联苯（PCB）、聚氯化萘（PCN）、聚氯三联苯（PCT）	欧盟规程建议（76/769/EEC）
	日本 化学物质审查法第 1 种等特定化学物质 等
短链型氯代烷烃（CP）	挪威 关于对特定有害化学物质使用等的限制 等
聚溴联苯（PBB）	欧盟规程建议（76/769/EEC）
	欧盟 欧洲危险物质使用限制规程建议(2002/95/EC)
	瑞士 关于降低化学物质风险的法令 等
聚溴二苯醚（PBDE）	欧盟规程建议（76/769/EEC）
	欧盟 欧洲危险物质使用限制规程建议(2002/95/EC)
	瑞士 关于降低化学物质风险的法令 等
三丁基锡化合物、三苯基锡化合物	日本 化学物质审查法 第 1 种、第 2 种特定化学物质 等
石棉	日本 劳动安全卫生法
	德国 化学品禁止规则（ChemVerbotsV）等
甲醛	德国 化学品禁止规则（ChemVerbotsV）
	丹麦 福尔马林管制规定 等
特定偶氮化合物	欧盟规程建议（76/769/EEC）等
重金属（镉、汞、六价铬）	欧盟 有关包装以及包装废弃物的命令（94/62/EC）
	美国 纽约州等 16 个州的包装材料重金属规定 等

## 2. 所属物质的详细信息(典型实例)

## ● 镉以及镉化合物

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
镉	Cadmium	7440-43-9	Cd	连接材料、表面处理 镍镉电池
镉合金	Cadmium alloys			低熔点焊接、保险丝等
氧化镉	Cadmium oxide	1306-19-0	CdO	颜料、碱性电池 化学合成材料
氯化镉	Cadmium chloride	10108-64-2	CdCl <sub>2</sub>	用于电镀浴(液)、氯乙烯 的稳定剂
硫化镉; 镉黄	Cadmium sulfide	1306-23-6 8048-07-5	CdS	颜料、半导体受光元件、油漆、墨水
硝酸镉	Cadmium nitrate	10325-94-7	Cd(NO <sub>3</sub> ) <sub>2</sub>	着色剂、电池、相片
四水硝酸镉	Cadmium nitrate tetrahydrate	10022-68-1	Cd(NO <sub>3</sub> ) <sub>2</sub> · 4H <sub>2</sub> O	
硫酸镉	Cadmium sulfate	10124-36-4	CdSO <sub>4</sub>	镉电池、电镀光泽剂、试剂
硬脂酸镉; 镉肥皂	Cadmium stearate	2223-93-0	Cd(C <sub>18</sub> H <sub>35</sub> O <sub>2</sub> ) <sub>2</sub>	用于氯乙烯的稳定剂
其他镉化合物	Other cadmium compounds			



## ● 铅以及铅化合物

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
铅、金属铅	Lead metal	7439-92-1	Pb	
铅 / 锡合金	Lead / tin alloy		Pb-Sn	焊料、涂蜡材料、 电气连接
氧化铅；一氧化铅；氧化亚铅； 氧化铅(II价)；密陀僧；铅黄	Lead (II) oxide	1317-36-8	PbO	颜料、橡胶硫化促进 剂、 固体润滑剂
二氧化铅；氧化亚铅；氧化二铅； 氧化铅(IV价)；过氧化铅	Lead (IV) oxide	1309-60-0	PbO <sub>2</sub>	铅蓄电池、橡胶固化 剂、颜料的原料
三氧化二铅；三二氧化铅	Dilead trioxide	-	Pb <sub>2</sub> O <sub>3</sub>	
四氧化三铅；四三氧化铅； 铅丹；光明丹	Lead (II, IV) oxide	1314-41-6	Pb <sub>3</sub> O <sub>4</sub>	颜料、铅蓄电池、 玻璃、涂料
叠氮化铅、铅叠氮化物	Lead azide	13424-46-9	PbN <sub>6</sub>	
二氟化铅；氟化亚铅； 氟化铅(II价)	Lead (II) fluoride	7783-46-2	PbF <sub>2</sub>	特殊光学玻璃、 颜料
二氯化铅；氯化铅(II价)；氯化铅	Lead (II) chloride	7758-95-4	PbCl <sub>2</sub>	
四氯化铅；氯化铅(IV价)	Lead (IV) chloride;	13463-30-4	PbCl <sub>4</sub>	
碘化亚铅；碘化铅(II价)	Lead (II) iodide	10101-63-0	PbI <sub>2</sub>	青铜、印刷、相片
硫化铅(II价)	Lead (II) sulfide	1314-87-0	PbS	半导体紫外线检测器
氰化铅(II价)	Lead (II) cyanide	592-05-2	Pb(CN) <sub>2</sub>	防锈颜料
氟化硼铅	Lead fluoroborate	13814-96-5	Pb(BF <sub>4</sub> ) <sub>2</sub>	电镀浴(液)、耐蚀表 面处理
氟化硅铅	Lead fluosilicate	25808-74-6	PbSiF <sub>6</sub>	电镀浴(液)、铅精炼
硝酸铅	Lead nitrate	10099-74-8	Pb(NO <sub>3</sub> ) <sub>2</sub>	光学玻璃
碳酸铅	Lead carbonate	598-63-0	PbCO <sub>3</sub>	
氢氧化化铅； 氯化碳酸铅；铅白	Lead hydroxycarbonate	1344-36-1	(PbCO <sub>3</sub> ) <sub>2</sub> Pb(OH) <sub>2</sub>	颜料、聚氯乙烯稳定 剂
过氯酸铅	Lead perchlorate	13637-76-8	Pb(ClO <sub>4</sub> ) <sub>2</sub>	
硫酸亚铅；硫酸铅(II价)	Lead (II) sulfate	7446-14-2; 15739-80-7	PbSO <sub>4</sub>	颜料、橡胶配合剂、 聚氯乙烯稳定剂、电 池
氧基硫酸铅； 三代硫酸铅	Lead oxide sulfate	12202-17-4	Pb <sub>4</sub> SO <sub>7</sub>	颜料
正磷酸铅；磷酸铅	Lead (II) phosphate	7446-27-7	Pb <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	塑料稳定剂
硫氰酸铅	Lead thiocyanate	592-87-0	Pb(SCN) <sub>2</sub>	染色、火柴

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中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
三水醋酸亚铅; 三水醋酸铅(II价)	Lead(II) acetate, trihydrate	6080-56-4	$\text{Pb}(\text{CH}_3\text{COO})_2 \cdot 3\text{H}_2\text{O}$	
醋酸亚铅; 醋酸铅(II价); 铅糖	Lead(II) acetate	301-04-2	$\text{Pb}(\text{CH}_3\text{COO})_2$	
醋酸二铅; 醋酸铅(IV价)	Lead(IV) acetate	546-67-8	$\text{Pb}(\text{CH}_3\text{COO})_4$	
油酸盐铅	Lead oleate	1120-46-3	$\text{Pb}[\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{CH}(\text{CH}_2)_7\text{COO}]_2$	润滑剂、硬化剂等
硬脂酸铅	Lead stearate	7428-48-0	$\text{Pb}(\text{C}_{17}\text{H}_{35}\text{COO})_2$	聚氯乙烯稳定剂、润滑剂
偏硼酸铅(II价); 硼酸铅	Lead(II) metaborate	10214-39-8	$\text{Pb}(\text{BO}_2)_2 \cdot \text{H}_2\text{O}$	油漆的干燥剂
偏硅酸铅; 硅酸铅	Lead metasilicate	11120-22-2; 10099-76-0	$\text{PbSiO}_3$	陶瓷
亚锑酸铅	Lead antimonate	13510-89-9	$\text{Pb}_3(\text{SbO}_4)_2$	颜料、玻璃着色
砷酸铅; 砷酸氢铅; 酸性砷酸铅	Lead arsenate(1:1)	7784-40-9	$\text{PbHAsO}_4$	
亚砷酸铅; 偏亚砷酸铅	Lead(II)arsenite	10031-13-7	$\text{Pb}(\text{AsO}_2)_2$	杀虫剂
氯酸铅; 铬黄; 金黄; 活黄; 毛黄	Lead chromate; chrome yellow	1344-37-2	$\text{PbCrO}_4$	颜料、涂料、墨水
钼酸铅	Lead molybdate	10190-55-3	$\text{PbMoO}_4$	颜料
铅酸钙	Calcium plumbate	12013-69-3	$\text{Ca}_2\text{PbO}_4$	氧化剂
四甲基铅; 四甲铅; TML	Tetramethyllead	75-74-1	$\text{Pb}(\text{CH}_3)_4$	
四乙基铅; 四乙铅; TEL	Tetraethyllead	78-00-2	$\text{Pb}(\text{C}_2\text{H}_5)_4$	
其他铅化合物以及合金	Other lead compounds and alloys			

## ●汞以及汞化合物

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
汞；金属汞	Mercury	7439-97-6	Hg	电极、水银灯
汞合金；汞齐	Mercury alloys ; amalgam			
氧化亚汞；氧化银(I价)	Mercury(I) oxide	15829-53-5	Hg <sub>2</sub> O	
氧化二汞；氧化汞(II价)	Mercury(II) oxide	21908-53-2	HgO	汞电池、防腐剂
氯化亚汞；氯化汞(I价)； 甘汞	Mercury(I) chloride	10112-91-1	Hg <sub>2</sub> Cl <sub>2</sub>	电极、颜料
氯化二汞； 氯化汞(II价)；升汞	Mercury(II) chloride	7487-94-7	HgCl <sub>2</sub>	金属蚀刻、 干电池、防腐剂
硝酸二汞；硝酸汞(II价)	Mercury(II) nitrate	10045-94-0	Hg(NO <sub>3</sub> ) <sub>2</sub>	油毛毡、催化剂
硫酸亚汞；硫酸汞(I价)	Mercury(I) sulfate		Hg <sub>2</sub> SO <sub>4</sub>	电池
雷酸二汞；雷酸汞(II价)	Mercury(II) fulminate	628-86-4	Hg(ONC) <sub>2</sub>	
醋酸二汞；醋酸汞(II价)	Mercury(II) acetate	1600-27-7	Hg(CH <sub>3</sub> COO) <sub>2</sub>	
甲基汞盐	Methylmercury salts	e. g. 22967-92-6	CH <sub>3</sub> HgX ; X=Cl, Br, I, OH, etc.	防霉剂
乙烷基汞盐	Ethylmercury salts		C <sub>2</sub> H <sub>5</sub> HgX ; X=Cl, Br, I, OH, etc.	防腐剂、杀菌剂
丙基汞盐	Propylmercury salts		C <sub>3</sub> H <sub>7</sub> HgX ; X=Cl, Br, I, OH, etc.	
苯基汞盐	Phenylmercury salts		C <sub>6</sub> H <sub>5</sub> HgX ; X=Cl, Br, I, OH, etc.	防腐剂、杀菌剂
甲基氧乙烷基汞盐	Methoxyethylmercury salts		CH <sub>3</sub> OC <sub>2</sub> H <sub>4</sub> HgX ; X=Cl, Br, I, OH, etc.	杀菌剂、防霉剂
二烷基组汞	Dialkylmercury		R <sub>2</sub> Hg ; R=alkyl group (C <sub>n</sub> H <sub>2n+1</sub> )	
二苯基汞	Diphenylmercury	587-85-9	(C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> Hg	
其他汞化合物	Other mercury compounds			

## ●六价铬化合物

## 1. 所属物质的例子

所属物质只有六价的铬元素。

因此，金属铬、铬合金、没有残存六价铬的铬电镀不属于此类。

此外，三价铬化合物也不属于此类。

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
三氧化铬；氧化铬（VI价）； 无水铬酸；铬酸	Chromium(VI) oxide; chromium trioxide	1333-82-0	CrO <sub>3</sub>	颜料、催化剂、 电镀、鞣皮
铬酸锂	Lithium chromate	14307-35-8	Li <sub>2</sub> CrO <sub>4</sub>	防腐剂
铬酸钠	Sodium chromate	7775-11-3	Na <sub>2</sub> CrO <sub>4</sub>	防锈、鞣皮
铬酸钾	Potassium chromate	7789-00-6	K <sub>2</sub> CrO <sub>4</sub>	颜料、墨水、 鞣皮
氯铬酸钾；三氧代氯酸钾	Potassium chlorochromate	16037-50-6	K[CrO <sub>3</sub> Cl]	
铬酸铵	Ammonium chromate	7788-98-9	(NH <sub>4</sub> ) <sub>2</sub> CrO <sub>4</sub>	相片、催化剂
铬酸铜	Copper chromate	13548-42-0	CuCrO <sub>4</sub>	媒染剂
铬酸镁	Magnesium chromate	13423-61-5	MgCrO <sub>4</sub>	防锈、表面处理
铬酸钙；钙铬黄	Calcium chromate	13765-19-0	CaCrO <sub>4</sub>	颜料、墨水、鞣皮
铬酸锶	Strontium chromate	7789-06-2	SrCrO <sub>4</sub>	颜料、防锈
铬酸钡	Barium chromate	10294-40-3	BaCrO <sub>4</sub>	防腐、颜料、 陶瓷用着色剂
铬酸铅；铬黄；金黄；活黄； 毛黄	Lead chromate; chrome yellow	1344-37-2	PbCrO <sub>4</sub>	颜料、涂料、墨水
铬酸锌；黄锌；锌黄；铬酸锌； 黄锌；锌黄；金铬酸盐；金黄	Zinc chromate	12018-19-8; 13530-65-9; 14018-95-2	ZnCrO <sub>4</sub>	颜料、防腐剂
重铬酸钠；重铬酸钠	Sodium dichromate; sodium bichromate	10588-01-9	Na <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	颜料、防腐、相片、 鞣皮
重铬酸钾	Potassium dichromate; potassium bichromate	7778-50-9	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	颜料、相片、电镀、 电池、鞣皮
重铬酸铵	Ammonium dichromate; ammonium bichromate	7789-09-5	(NH <sub>4</sub> ) <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	颜料、相片、催化剂
重铬酸钙	Calcium dichromate; calcium bichromate	14307-33-6	CaCr <sub>2</sub> O <sub>7</sub>	防腐、催化剂
重铬酸锌	Zinc dichromate; zinc bichromate		ZnCr <sub>2</sub> O <sub>7</sub>	颜料
其他六价铬化合物	Other hexavalent chromium compounds			

## ● 聚氯联苯 (PCB)、聚氯化萘 (PCN)、聚氯三联苯 (PCT)

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子 式	主要指定用途
PCB; 聚氯联苯; 氯联苯	PCB; polychlorinated biphenyls	1336-36-3	$C_{12}H_{10-x}Cl_x$ ( $x=1-10$ )	热溶剂、润滑剂 和电容器油
PCN; 聚氯化萘; 氯化萘	PCN; polychlorinated naphthalenes		$C_{10}H_{8-x}Cl_x$ ( $x \geq 3$ )	润滑剂、防腐剂、 涂料
三氯萘	Trichloronaphthalene	1321-65-9	$C_{10}H_5Cl_3$	
四氯萘	Tetrachloronaphthalene	1335-88-2	$C_{10}H_4Cl_4$	
五氯萘	Pentachloronaphthalene	1321-64-8	$C_{10}H_3Cl_5$	
八氯萘	Octachloronaphthalene	2234-13-1	$C_{10}Cl_8$	
PCT; 聚氯三联苯	PCT; polychlorinated terphenyls	61788-33-8	$C_{18}H_{14-x}Cl_x$ ( $x=1-14$ )	润滑剂、防腐剂、 涂料

## ● 氯代烷烃 (CP)

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子 式	主要指定用途
氯化烷烃; 氯代烷烃; 氯烷烃 碳原子数 10-13、氯 48 wt%以上	Short-chain Chlorinated paraffins C10-13, Cl $\geq$ 48 wt%	e. g. 85535-84-8		增塑剂、阻燃剂

## ● 聚溴联苯 (PBB)

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子 式	主要指定用途
PBB; 多溴化联苯; 聚溴二联苯	PBB; Polybrominated biphenyls;	e. g. 67774-32-7	$C_{12}H_{10-x}Br_x$ ( $x=1-10$ )	阻燃剂

## ● 聚溴二苯醚 (PBDE)

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
聚溴二苯醚; 聚溴二苯基氧化物; 聚溴化二苯醚; PBDE; PBDO; PBBE	Polybromodiphenyl ethers; polybromodiphenyloxides; polybrominated biphenyl ethers; PBDE; PBDO; PBBE		$C_{12}H_{10-x}Br_xO$ ( $x=1-10$ )	阻燃剂
十溴二苯醚; 十溴二苯基氧化物; DBDE; DecaBDE; DBDPE; DBDPO	Decabromodiphenyl ether; decabromodiphenyloxiide; DBDE; DecaBDE; DBDPE; DBDPO	1163-19-5	$C_{12}Br_{10}O$	阻燃剂 (PE、 ABS、聚酯 用)
八溴二苯醚; 八溴二苯基氧化物; OBDE; OctaBDE	Octabromodiphenyl ether; octabromodiphenyloxiide; OBDE; OctaBDE	32536-52-0	$C_{12}H_2Br_8O$	阻燃剂 (ABS、 HIPS、LDPE 用)
六溴二苯醚; 六溴二苯基氧化物	Hexabromodiphenyl ether; hexabromodiphenyloxiide	36483-60-0	$C_{12}H_4Br_6O$	阻燃剂
五溴二苯醚; 五溴二苯基氧化物; PentaBDE	Pentabromodiphenyl ether; pentabromodiphenyloxiide; PentaBDE	32534-81-9	$C_{12}H_6Br_5O$	阻燃剂

## ●三丁基锡化合物、三苯基锡化合物

## 1. 所属物质的例子

仅包括三丁基锡化合物和三苯基锡化合物，二丁基锡化合物、二苯基锡化合物等不属于此类。

另外，金属锡、锡合金、电镀锡、锡的无机化合物不属于此类。

所属物质的例子如下所示。

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
三丁基锡溴化物 溴化三-n-丁基锡	Tributyl tin bromide	1461-23-0	(C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> SnBr	杀菌剂
双(三丁基锡)=氧化物 三丁基锡氧化物 双(三丁基锡)氧化物	Tributyltin oxide; Bis(tributyltin)oxide; Distannoxane, hexabutyl-	56-35-9	C <sub>24</sub> H <sub>54</sub> O <sub>2</sub> Sn <sub>2</sub>	杀菌剂
三苯基锡	Triphenyl tin	668-34-8	(C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub> Sn	杀菌剂
三苯基锡=氯化物 三苯基锡氯化物 氯化三苯基锡	Triphenyltin chloride; Fentin chloride; Stannane, chlorotriphenyl-	639-58-7	(C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub> SnCl	杀菌剂
三苯基锡=氢氧化物 三苯基锡氢氧化物 羟基三苯基锡 氢氧化三苯基锡	Triphenyl tin Hydroxide; Fentin hydroxide; Stannane, Bydroxytriphenyl-	76-87-9	(C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub> SnOH	杀菌剂
三苯基锡=N,N'-二甲基二硫代 氨基甲酸盐 三苯基锡二甲基二硫代氨基甲 酸三苯基锡 [(二甲基二硫代氨基)硫]三苯 基黄锡	Triphenyl tin N,N'-dimethyldithioca rbamate; Stannane, [[dimethylamino]thiome thyl]thio]triphenyl-	1803-12-9	(C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub> Sn(CH <sub>3</sub> ) <sub>2</sub> NCS <sub>2</sub>	
三苯基锡=氟化物 三苯基锡氟化物 氟化三苯基锡 氟化三苯基黄锡	Triphenyl tin fluoride; Fentin fluoride	379-52-2	(C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub> SnF	
三苯基锡乙酸盐 醋酸三苯基锡 (醋乙酐)三苯黄锡	Triphenyl tin acetate; Fentin acetate; Stannane, (acetyloxy)triphenyl-	900-95-8	(C <sub>6</sub> H <sub>5</sub> ) <sub>3</sub> SnOCOCH <sub>3</sub>	
三苯基锡脂肪酸盐(仅限于脂肪 酸的碳原子数为9、10或11之 物)	Triphenyl tin fatty acid salts	18380-71-7 18380-72-8 47672-31-1 94850-90-5		

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三苯基锡=氯代乙酸盐 三苯基锡一氯化乙酸盐 [(氯代乙酸)氧化]三苯基]黄锡	Triphenyl tin chloroacetate; (chloroacetoxy) triphenyl stannane	7094-94-2	$(C_6H_5)_3SnOCOC_2H_5Cl$	
三丁基锡甲基甲基丙烯酸盐 甲基丙烯酸三丁基锡	Tributyl tin methacrylate; Tributyl(methacryloyloxy) stannane; Stannane, Tributyl[(2-methyl-1-oxo-2-propeny) oxy]-	2155-70-6	$(C_4H_9)_3SnC_4H_5O_2$	
双(三丁基锡)富马酸盐	Bis(tributyl tin) fumarate	6454-35-9 24291-45-0	$C_2H_2(COO)_2$ $([C_4H_9]_3Sn)_2$	
三丁基锡氟化物	Tributyl tin fluoride	1983-10-4 7304-48-5	$(C_4H_9)_3SnF$	
双(三丁基锡)2,3-二溴丁二酸盐	Bis(tributyl tin)2,3- dibromosuccinate	31732-71-5 56323-17-2	$([C_4H_9]_3Sn)_2C_2H_2$ $(BR)_2(COO)_2$	
三丁基锡乙酸盐 (醋酸三丁基锡)	Tributyl tin acetate	56-36-0	$(C_4H_9)_3SnOCOC_2H_3$	
三丁基锡=月桂酸盐 三丁基锡月桂酸盐 三丁基[(1-氧代十二烷基)羟基]黄锡	Tributyl tin laurate; Tributyl(lauroyloxy)sta nnane	3090-36-6	$(C_4H_9)_3SnC_{12}H_{23}O_2$	



中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
双(三丁基锡)苯二甲酸盐 三丁基锡苯二甲酸盐 (邻苯二酰二羟基)双[三丁基锡]	Bis(tributyl tin) phthalate; [(Phthaloylbis(oxy)]bis(tributylstannane)	4782-29-0	(C <sub>6</sub> H <sub>4</sub> ) (COO) <sub>2</sub> ([C <sub>4</sub> H <sub>9</sub> ] <sub>3</sub> Sn) <sub>2</sub>	
三丁基锡=磺酸盐 三丁基锡磺酸盐 磺酸三丁基羟基黄锡	Tributyl tin sulfamate; Stannane, [(aminosulfonyl)oxy]tributyl-	6517-25-5	(C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> SnSO <sub>3</sub> NH <sub>2</sub>	
双(三丁基锡)=马来酸盐	Bis(tributyl tin) maleate	14275-57-1 24291-38-3	C <sub>28</sub> H <sub>56</sub> O <sub>4</sub> Sn <sub>2</sub>	
三丁基锡=氯化物 三-n-丁基锡氯化物	Tributyl tin chloride; Tributylchlorostannane; Stannane, tributylchloro-	1461-22-9 7342-38-3	(C <sub>4</sub> H <sub>9</sub> ) <sub>3</sub> SnCl	
三丁基锡=环戊烷羧酸盐和类似化合物的混合物 三丁基锡萘酸盐 萘酸三丁基锡	Mixture of tributyl tin cyclopentanecarboxylate and its analogs Stannane, tributyl-, mono(naphthenoyloxy) Derives. ; Tributyltin naphthenate	85409-17-2		
三丁基锡 = 1, 2, 3, 4, 4a, 4b, 5, 6, 10, 10a-十氢-7-异丙基-1, 4a-二甲基-1-菲羧酸盐和类似化合物的混合物 三丁基锡酪氨酸盐 三丁基锡酪氨酸酸盐	[1R-(1alpha, 4a, beta., 4b, alpha., 10a.alpha.)]-tributyl[[[1, 2, 3, 4, 4a, 4b, 5, 6, 10, 10a-decahydro-7-isopropyl-1, 4a-dimethyl-1-phenanthryl]carbonyl]oxy]stannane	26239-64-5	C <sub>32</sub> H <sub>56</sub> O <sub>2</sub> Sn	
烷基=丙烯酸盐=甲基丙烯酸甲酯=甲基丙烯酸三丁基锡的聚合物(烷基=丙烯酸盐的碳原子数限定为8个) 丙烯酸甲酯、甲基丙烯酸三丁基锡聚合物	Octyl crylate-Methyl methacrylate-Tributyltin methacrylate copolymer (alkyl; C=8)	67772-01-4		

## ● 石棉

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
石棉 (总称)	Asbestos	1332-21-4; 132207-32-0; 132207-33-1		绝缘体、填料
蓝石棉	Crocidolite	12001-28-4	$\text{Na}_2\text{Fe}_5(\text{Si}_8\text{O}_{22})(\text{OH})_2$	绝缘体、填料
温石棉	Chrysotile	12001-29-5	$\text{Mg}_3\text{Si}_2\text{O}_5(\text{OH})_4$	绝缘体、填料
铁石棉	Amosite	12172-73-5	$(\text{Mg}, \text{Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$	绝缘体、填料
直闪石	Anthophyllite	77536-67-5	$(\text{Mg}, \text{Fe})_7\text{Si}_8\text{O}_{22}(\text{OH})_2$	绝缘体、填料
透闪石	Tremolite	77536-68-6	$\text{Ca}_2\text{Mg}_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	绝缘体、填料
阳起石	Actinolite	77536-66-4	$\text{Ca}_2(\text{Mg}, \text{Fe})_5\text{Si}_8\text{O}_{22}(\text{OH})_2$	绝缘体、填料

## ● 甲醛

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
甲醛 (单基物)、 福尔马林	Formaldehyde; formalin; formic aldehyde; formol	50-00-0	HCHO	防腐剂、单基物 (如, 酚醛树脂和三聚氰胺 树脂)

## ● 聚氯乙烯 (PVC) 以及 PVC 混合物

## 1. 所属物质的例子

中文名称 (通称、简称、化学名称等)	英文名称	CAS号码	化学分子式	主要指定用途
PVC 和 PVC 混合物; 聚氯乙烯和聚 氯乙烯混合物	PVC and PVC blends; polyvinylchloride and polyvinylchloride blends	e. g. 9002-86-2		氯乙烯树脂

（注意事项）

对索尼技术标准 SS-00259 部件和材料中的环境管理物质 管理规定的改订或修正，有可能不提前预告而变更内容。

部件和材料中的环境管理物质 管理规定

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