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

SS-00259 for General Use, Sixth 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 (The application of some repair parts for products on the market shall be followed the instructions on the separately issued notice.)
- Packaging materials that parts suppliers use for delivery and protection (See Table 4.3a for details)
- Batteries

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 applications classified into this Level are those that are banned for the use in parts and materials.
   b) Level 2
   On the date set in each table, the substances and their applications in the respective tables shall be reclassified into Level 1.
   c) Level 3
   No effective date of the ban on the delivery is currently set for the substances and their applications 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 applications 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 this Technical Standard
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)
	Short-chain chlorinated paraffins (SCCP)
	Other chlorinated organic compounds
Brominated organic compounds	Polybrominated biphenyls (PBB)
	Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])
	Other brominated organic compounds
Tributyltin compounds (TBT) Triphenyltin compounds (TPT)	
Asbestos	
Specific azo compounds	
Formaldehyde	
Polyvinyl chloride (PVC) and PVC blends	
Beryllium oxide Beryllium copper	
Specific phthalates (DEHP, DBP, BBP, DINP, DIDP, DNOP, DNHP)	
Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)	

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, organic compounds, inorganic salts, organic salts, and other substances that contain cadmium		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page 14.) - The stabilizers, pigments, or dyes used for plastics (including rubber) materials (e.g. labels, cabinets, phonograph records, cable tie, the keys of remote commanders, the outer plastic resins of electrical parts, and the insulators of electrical wiring) - Paints, inks - Surface treatment (e.g. electroplating, electroless plating, etc.) and coating - Photographic films - Fluorescent lamps (small-sized ones, straight-tube ones)	Banned since the establishment of this Standard
	All uses except those specified in Exemption Typical examples are given below: - Switches, relays, breakers, DC motors, and other electrical contact points - Fuse elements of temperature fuses - Glass, and the pigments as well as dyes of glass paints (paints for glass and the pigments as well as dyes used for glass) - Solder (whose cadmium concentration is more than 20 ppm) - CdS-photocells and the phosphors contained in fluorescent display devices - Resistor elements (glass frit)	Banned since January 1, 2005
	- Parts composed of metals containing zinc (e.g. brass, hot dip galvanizing, etc.) whose cadmium concentration is more than 100 ppm	Banned since October 1, 2005
Exemption	- 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 - Cadmium in optical glass, filter glass	N/A

Test objects: plastics (including rubber), paints, and inks Allowable concentration: Less than 5 ppm
Standards for measurement 1) Sample preparation Typical sample preparation 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 sample preparation, 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 sample preparation 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 sample preparation 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, sample preparation methods that are actually applied must be specified along with that JIS standard.

Substances: Lead and lead compounds		
All metals, alloys, inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances that contain lead		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page14.) - 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

<table>
<tr><td rowspan="2">Level 1</td><td>All uses except those specified in Level 3 and Exemption
Typical examples are given below:
- The surface coatings for the external electrodes, lead wires, etc. of the parts contained in AC adaptors, remote commanders, semiconductor devices, etc.
- 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
- 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)
- 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
- The paints and inks used for areas other than the outer and exposed ones of devices</td><td>Banned since January 1, 2005</td></tr>
<tr><td>- Electroless plating films such as electroless nickel plating and electroless gold plating whose lead content is more than 1000 ppm</td><td>Banned since February 1, 2006</td></tr>
<tr><td>Level 3</td><td>- Electroless plating films such as electroless nickel plating and electroless gold plating whose lead content is 1000 ppm or less</td><td>N/A</td></tr>
<tr><td>Exemption</td><td>- High melting temperature type solder (i.e. lead based alloys containing 85 wt% or more)
- Electronic ceramic parts (e.g. piezoelectric devices, dielectric ones, and magnetic ones [ferrites])
- Optical glass, filter glass
- Glass of cathode ray tubes, glass of electronic components, and glass of fluorescent tubes
The above glass materials include adhesives, resistor elements, glass frit, conductive pastes (silver or copper ones), and sealing materials.
- 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%
- Solder to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages

(*1) Allowable lead concentrations
<table><tr><th>Type of alloy</th><th>Allowable lead concentration</th></tr><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></table></td><td>N/A</td></tr>
</table>

Test objects: plastics (including rubber), paints, and inks Allowable concentration: Less than 100 ppm
Standards for measurement 1) Sample preparation Typical sample preparation 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 sample preparation, 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 sample preparation 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 sample preparation methods specified in this Standard. EN 1122 is not applicable to the sample preparation 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, sample preparation 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 that contain mercury		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page 14.) - 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 that contain hexavalent chromium		
Targets		Effective date of the ban on the delivery
Level 1	- Packaging materials (See page 14.)	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: Short-chain chlorinated paraffins (SCCP)		
Short-chain chlorinated paraffins with carbon chain length;10-13		
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 (TBT) and triphenyltin compounds (TPT)		
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		
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 and amine compounds in Table 4.2a		
Targets		Effective date of the ban on the delivery
Level 1	The 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)	Banned since the establishment of this Standard
Level 3	The parts or articles that do not come into continuous contact with the human skin (e.g. cushions, mice, remote commanders, and carrying bags)	N/A
Test methods (for reference) The methods for decomposing azo compounds and then extracting amines are as follows: 1) EN 14362-1:2003, “Textiles-Methods for the determination of certain aromatic amines derived from azo colorants -Part 1: Detection of the use of certain azo colorants accessible without extraction”; 2) CEN ISO/TS 17234:2003, “Leather-Chemical tests-Determination of certain azo colorants in dyed leathers”; and 3) EN 14362-2:2003, “Textiles-Methods for the determination of certain aromatic amines derived from azo colorants -Part 2: Detection of the use of certain azo colorants accessible by extracting the fibres.”		

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

<table>
<tr><td colspan="3">Substance: Formaldehyde</td></tr>
<tr><td colspan="2">Targets</td><td>Effective date of the ban on the delivery</td></tr>
<tr><td rowspan="2">Level 1</td><td>- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for import into Europe (e.g. speakers and racks)</td><td>Banned since the establishment of this Standard</td></tr>
<tr><td>- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for destinations other than Europe (e.g. speakers, racks)</td><td>Banned since January 1, 2005</td></tr>
<tr><td colspan="3">Reference value (emission content): Obtain the value by any one of the following methods.
1) [With a chamber method]
Concentration in the air: Equal to or less than 0.1 ppm (or 0.124 mg/m^3) in an air-tight test chamber whose volume is 12 m^3, 1 m^3, or 0.0225 m^3
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)
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.)</td></tr>
<tr><td colspan="3">Measurement methods:
- A chamber method specified in EN 717-1:2004 (Wood based panels; determination of formaldehyde release; formaldehyde emission by the chamber method)
- A perforator method specified in EN 120 (Wood based panels; determination of formaldehyde content; extraction method called perforator method; EN 120:1992)
- A desiccator method specified in JIS A 5905 (Fibreboards) and JIS A 5908 (Particleboards)</td></tr>
</table>

<table>
<tr><td colspan="3">Substances: Polyvinyl chloride (PVC) and PVC blends</td></tr>
<tr><td colspan="2">Targets</td><td>Effective date of the ban on the delivery</td></tr>
<tr><td rowspan="6">Level 1</td><td>- Substrates for FeliCa contactless IC cards
* For reference, the targets have never contained PVC or PVC blends.</td><td>Banned since before the establishment of this Standard</td></tr>
<tr><td>- 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)</td><td>Banned since the establishment of this Standard</td></tr>
<tr><td>- Cable ties made of PVC or PVC blends used for accessories and connecting cords</td><td>Banned since July 1, 2002</td></tr>
<tr><td>- Packaging materials to protect, contain, or transport products or supplied accessories (e.g. bags, tapes, cartons, and blister packs)</td><td>Banned since January 1, 2005</td></tr>
<tr><td>- Heat shrink tubes</td><td>Banned since April 1, 2005</td></tr>
<tr><td>- Flexible flat cables (FFC)
- Sheets and laminates used for exterior of wooden speakers
- Insulating plates, decorative panels, labels, sheets, and laminates</td><td>Banned since April 1, 2007</td></tr>
</table>

Substances: Polyvinyl chloride (PVC) and PVC blends		
Targets		Effective date of the ban on the delivery
Level 3	- Connection cords for wearable equipment (e.g. cables for ear phones, head phones, and ear microphones) - Coating for insulation and protection used for the inside or outside of devices, insulating tubes, carrying belts, spacers, holders, covers, ducts, etc. - 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) - Parts consisting of wires (e.g. connectors with cords) and wires used for internal wiring (e.g. motor leads) - Connection cords (e.g. connection cords for USB or i.LINK, and video cords, AC adaptors secondary leads, flat wires, multi core cables, speaker cords, etc.) - Harnesses and processing wires (e.g. coaxial cables, flat wires, double insulation wires, and shielded wires) - Coating agents and fabrics for the carrying bags, carrying cases, and carrying pouches, which are designed for exclusive use with professional-electronics products - Developing papers - Insulation caps for capacitors, power supply switches, and fuses - Trays, magazine sticks, reels, embossed carrier tapes used by parts suppliers for parts packaging - Suction cups for mounting in-vehicle products - Wiring clip used for the inside of devices (made of polyvinyl chloride-coated metal) Other parts except those classified into Levels 1 and Exemption	N/A
Exemption	- Binder for resins - Polyvinyl electrical wires for high voltage - Insulating tapes - Speaker grilles - Power supply cords designed for use in countries and regions other than Japan, the U.S., and Canada - Parts that are not classified into Levels 1 and 3, and are composed of vinyl chloride copolymers or blends of PVC and other polymers - Transformer leads whose joint is fixed by varnish impregnation - Curl cords - Extra fine electrical wires that are AWG (American Wire Gauge) 36 or more - Professional cables for which general-purpose ones cannot be substituted (e.g. cables for broadcast cameras and microphone cables)	N/A

Substances: Beryllium oxide		
Targets		Effective date of the ban on the delivery
Level 2	- All uses	April 1, 2008

Substances: Beryllium copper		
Targets		Effective date of the ban on the delivery
Level 3	- All uses	N/A

Substances: Specific phthalates (DEHP, DBP, BBP, DINP, DIDP, DNOP, DNHP)		
Targets		Effective date of the ban on the delivery
Level 3	- Plasticizer in polyvinyl chloride resin used for cable coating, cord coating, plugs and connecters	N/A

Table 4.2b List of specific phthalates (phthalic esters)

Abbreviation	CAS No.	Specific phthalates
DEHP	117-81-7	Di (2-ethylhexyl) phthalate
DBP	84-74-2	Di-n-butyl phthalate
BBP	85-68-7	Butyl benzyl phthalate
DINP	28553-12-0 68515-48-0	Diisononyl phthalate (technical mixture)
DIDP	26761-40-0 68515-49-1	Diisodecyl phthalate (technical mixture)
DNOP	117-84-0	Di-n-octyl phthalate
DNHP	84-75-3	Di-n-hexyl phthalate

Substances: Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)		
Targets		Effective date of the ban on the delivery
Level 3	- All uses (e.g. refrigerant and insulation)	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

<table>
<tr><td colspan="3">Substances: Heavy metals (cadmium, lead, mercury, and hexavalent chromium)</td></tr>
<tr><td colspan="3">Articles that satisfy not only the rules specified in Table 4.2, but also the following conditions determined by the regulations of relevant laws</td></tr>
<tr><td colspan="2">Targets</td><td>Effective date of the ban on the delivery</td></tr>
<tr><td>Level 1</td><td>- All packaging materials
Some examples are given in PACKAGING of Table 4.3a.</td><td>Banned since the establishment of this Standard</td></tr>
<tr><td>Exemption</td><td>- Cartons for returnable boxes owned by parts suppliers</td><td>N/A</td></tr>
<tr><td colspan="3">Allowable concentrations
- "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.
(Typical plastic parts: handles, cushions, films, reels, tapes, magazine sticks [including stoppers], polyvinyl bags, bands, and trays)</td></tr>
<tr><td colspan="3">For hexavalent chromium:
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 sample preparation methods as those used for cadmium and lead are applicable.
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. When the sum of the cadmium, lead and mercury concentration is less than the 100 ppm limit, analyze and confirm that no hexavalent chromium is present, using the standard methods for detecting hexavalent chromium provided on page 15.

Standards for four heavy metals measurement
1) Sample preparation
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:
(1) A pressurized acid decomposition method done in a sealed container (a microwave decomposition method [e.g. EPA 3052:1996]);
(2) A heating evaporation-cold-vapor mercury-atomic-absorption method (Full-automatic test equipment is marketed.); and
(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.
Note: In the process of sample preparation, particular attention is required to avoid mercury sublimation, and precipitates must be completely dissolved by some technical means.

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:
(1) A reduction-evaporation atom-absorption method,
(2) ICP-AES (ICP-OES) method with a hydride-generation apparatus; and
(3) ICP-MS method with a hydride-generation apparatus.</td></tr>
</table>

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) Sample preparation
   - 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 sample preparation 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.	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)

4.3.1 Definitions of "Battery" and "Battery pack" in this Technical Standard

"Battery" is defined as an electrical battery consisting of single primary cell or single secondary cell.
"Battery pack" means any set of multiple batteries or, one or more batteries that are placed in housing.
A terminal structure or an electronic control unit attached to the same housing with a battery in it is regarded as a part of "Battery pack."
Battery cells used for "Battery packs" shall be compliant with the rules specified in Table 4.4, because they are identified as "Battery."
For "Batteries" and "Battery packs," follow the standards specified in Section 4.1 and 4.2 also.

Table 4.4 Rules for batteries

Substances: Heavy metals (cadmium, lead, and mercury)			
All metals, alloys, inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances that contain cadmium, lead, and mercury			
Targets			Effective date of the ban on the delivery
Level 1	Cd	- NiCd batteries	Banned since January 1, 2007
	Pb	- "Batteries" whose lead content, in proportion to the total weight of each one, is 0.4% or more - "Battery packs" whose lead content, in proportion to the total weight of each one, is 0.4% or more - 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 - The following batteries and battery packs except button cell batteries "Batteries" whose mercury content, in proportion to the total weight of each one, is 0.0005% or more "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

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)
- Short-chain chlorinated paraffins (SCCP)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenylethers (PBDE)
- Tributyltin compounds (TBT) and triphenyltin compounds (TPT)
- Asbestos
- Formaldehyde
- Polyvinyl chloride (PVC) and PVC blends

Disclaimer: Applicable laws and regulations, and controlled substances in Appendixes 1 and 2 are illustrative only, not all the substances and its alias name are listed.

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

Note: This information is confirmed as of March 2007. 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 and its amendments.
	European Union. EU Directive 91/338/EC and its amendments.
	European Union. RoHS Directive 2002/95/EC and its amendments.
	European Union. Batteries Directive 2006/66/EC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Lead and lead compounds	European Union. RoHS Directive 2002/95/EC and its amendments.
	European Union. Batteries Directive 2006/66/EC.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
	Denmark: Statutory Order No. 1012 and its amendments.
Mercury and mercury compounds	European Union. RoHS Directive 2002/95/EC and its amendments.
	European Union. Batteries Directive 2006/66/EC.
	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 and its amendments.
	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 and its amendments.
	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class I.
Short-chain chlorinated paraffins (SCCP)	Norway. Regulations relating to restrictions on the use, etc. of certain dangerous chemicals.
Polybrominated biphenyls (PBB)	European Union. EU Directive 76/769/EEC and its amendments.
	European Union. RoHS Directive 2002/95/EC and its amendments.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Polybrominated diphenylethers (PBDE)	European Union. EU Directive 76/769/EEC and its amendments.
	European Union. RoHS Directive 2002/95/EC and its amendments.
	Switzerland. Ordinance on the reduction of risks linked to chemical products.
Tributyltin compounds (TBT) Triphenyltin compounds (TPT)	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)
Specific azo compounds	European Union. EU Directive 76/769/EEC and its amendments.
Formaldehyde	Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV)
	Denmark: Statutory Order No. 289.
Heavy metals (lead, cadmium, mercury, and hexavalent chromium)	European Union. EU Directive 94/62/EC on packaging and packaging waste and its amendments.
	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	$CdCl_2$	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	$Cd(NO_3)_2$	Coloring agents, batteries, and photographs
Cadmium nitrate tetrahydrate	10022-68-1	$Cd(NO_3)_2 \cdot 4H_2O$	
Cadmium sulfate	10124-36-4	$CdSO_4$	Cadmium standard cells, reagent
Cadmium stearate	2223-93-0	$Cd(C_{18}H_{35}O_2)_2$	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_2	Lead-acid batteries, rubber curing agents, and materials for pigments
Dilead trioxide	–	Pb_2O_3	
Lead (II, IV) oxide	1314-41-6	Pb_3O_4	Pigments, lead-acid batteries, glass, and paints
Lead azide	13424-46-9	PbN_6	
Lead (II) fluoride	7783-46-2	PbF_2	Special optical glass, pigments
Lead (II) chloride	7758-95-4	$PbCl_2$	
Lead (IV) chloride	13463-30-4	$PbCl_4$	
Lead (II) iodide	10101-63-0	PbI_2	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	$Pb(CN)_2$	Antirust pigments
Lead fluoroborate	13814-96-5	$Pb(BF_4)_2$	Plating bath, anticorrosive surface treatment
Lead fluosilicate	25808-74-6	$PbSiF_6$	Plating bath, lead refinement
Lead nitrate	10099-74-8	$Pb(NO_3)_2$	Optical glass
Lead carbonate	598-63-0	$PbCO_3$	
Lead hydroxycarbonate	1344-36-1	$(PbCO_3)_2Pb(OH)_2$	Pigments, vinyl chloride stabilizers
Lead perchlorate	13637-76-8	$Pb(ClO_4)_2$	
Lead (II) sulfate	7446-14-2 15739-80-7	$PbSO_4$	Pigments, rubber compounding ingredients, vinyl chloride stabilizers, and batteries
Lead oxide sulfate	12202-17-4	Pb_4SO_7	Pigments
Lead (II) phosphate	7446-27-7	$Pb_3(PO_4)_2$	Stabilizers for plastics
Lead thiocyanate	592-87-0	$Pb(SCN)_2$	Stain, matches
Lead (II) acetate, trihydrate	6080-56-4	$Pb(CH_3COO)_2 \cdot 3H_2O$	
Lead (II) acetate	301-04-2	$Pb(CH_3COO)_2$	
Lead (IV) acetate	546-67-8	$Pb(CH_3COO)_4$	

Name	CAS No.	Chemical formula	Main purposes
Lead oleate	1120-46-3	$Pb[CH_3(CH_2)_7CH=CH(CH_2)_7COO]_2$	Lubricants, curing agents, etc.
Lead stearate	7428-48-0	$Pb(C_{17}H_{35}COO)_2$	Lubricants, stabilizers for vinyl chloride
Lead (II) metaborate	10214-39-8	$Pb(BO_2)_2 \cdot H_2O$	Desiccants for paints
Lead metasilicate	11120-22-2; 10099-76-0	$PbSiO_3$	Ceramics
Lead antimonite	13510-89-9	$Pb_3(SbO_4)_2$	Pigments, coloring agents for glass
Lead arsenate (1:1)	7784-40-9	$PbHAsO_4$	
Lead (II) arsenite	10031-13-7	$Pb(AsO_2)_2$	Pesticides
Lead chromate; chrome yellow	1344-37-2	$PbCrO_4$	Pigments, paints, and inks
Lead molybdate	10190-55-3	$PbMoO_4$	Pigments
Calcium plumbate	12013-69-3	Ca_2PbO_4	Oxidizers
Tetramethyl lead	75-74-1	$Pb(CH_3)_4$	
Tetraethyl lead	78-00-2	$Pb(C_2H_5)_4$	
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_2O	
Mercury (II) oxide	21908-53-2	HgO	Mercury cells, preservatives
Mercury (I) chloride	10112-91-1	Hg_2Cl_2	Electrodes, pigments
Mercury (II) chloride	7487-94-7	$HgCl_2$	Metal etching, batteries, and preservatives
Mercury (II) nitrate	10045-94-0	$Hg(NO_3)_2$	Felt, catalysts
Mercury (I) sulfate	7783-36-0	Hg_2SO_4	Batteries
Mercury (II) fulminate	628-86-4	$Hg(ONC)_2$	
Mercury (II) acetate	1600-27-7	$Hg(CH_3COO)_2$	
Methylmercury salts	e.g. 22967-92-6	CH_3HgX; X=Cl, Br, I, OH, etc.	Fungicides
Ethymercury salts		C_2H_5HgX; X=Cl, Br, I, OH, etc.	Preservatives, disinfectants
Propylmercury salts		C_3H_7HgX; X=Cl, Br, I, OH, etc.	
Phenylmercury salts		C_6H_5HgX; X=Cl, Br, I, OH, etc.	Preservatives, disinfectants
Methoxyethyl-mercury salts		$CH_3OC_2H_4HgX$; X=Cl, Br, I, OH, etc.	Disinfectants, fungicides
Dialkylmercury		R_2Hg; R=alkyl group (C_nH_{2n+1})	
Diphenylmercury	587-85-9	$(C_6H_5)_2Hg$	
Other mercury compounds			

• Hexavalent chromium compounds

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

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Chromium (VI) oxide; Chromium trioxide	1333-82-0	CrO_3	Pigments, catalysts, plating, and tanning
Lithium chromate	14307-35-8	Li_2CrO_4	Corrosion prevention
Sodium chromate	7775-11-3	Na_2CrO_4	Antirust, tanning
Potassium chromate	7789-00-6	K_2CrO_4	Pigments, inks, and tanning
Patassium chlorochromate	16037-50-6	$K[CrO_3Cl]$	
Ammonium chromate	7788-98-9	$(NH_4)_2CrO_4$	Photographs, catalysts
Copper chromate	13548-42-0	$CuCrO_4$	Mordants
Magnesium chromate	13423-61-5	$MgCrO_4$	Antirust, surface treatment
Calcium chromate	13765-19-0	$CaCrO_4$	Pigments, inks, and tanning
Strontium chromate	7789-06-2	$SrCrO_4$	Pigments, antirust
Barium chromate	10294-40-3	$BaCrO_4$	Pigments, corrosion prevention, and coloring agents for ceramics
Lead chromate; Chrome yellow	1344-37-2	$PbCrO_4$	Pigments, paints, and inks
Zinc chromate	12018-19-8; 13530-65-9; 14018-95-2	$ZnCrO_4$	Pigments, anticorrosives
Sodium dichromate; Sodium bichromate	10588-01-9	$Na_2Cr_2O_7$	Pigments, photographs, tanning, and corrosion prevention
Potassium dichromate; Potassium bichromate	7778-50-9	$K_2Cr_2O_7$	Pigments, photographs, batteries, plating, and tanning
Ammonium dichromate; Ammonium bichromate	7789-09-5	$(NH_4)_2Cr_2O_7$	Pigments, photographs, and catalysts
Calcium dichromate; Calcium bichromate	14307-33-6	$CaCr_2O_7$	Catalysts, corrosion prevention
Zinc dichromate; Zinc bichromate		$ZnCr_2O_7$	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; Polycholorinated naphthalenes		$C_{10}H_{8-x}Cl_x$ (x ≧ 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

• Short-chain chlorinated paraffins (SCCP)

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Short-chain Chlorinated paraffins C10-13	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; Polybromodiphenyloxide; Polybrominated biphenyl ethers; PBDE; PBDO; PBBE		$C_{12}H_{10-x}Br_xO$ (x = 1 – 10)	Flame retardants
Decabromodiphenyl ether; Decabromodiphenyloxide; DBDE; DecaBDE; DBDPE; DBDPO	1163-19-5	$C_{12}Br_{10}O$	Flame retardants (for PE, ABS, and polyester)
Octabromodiphenyl ether; Octabromodiphenyloxide; OBDE; OctaBDE	32536-52-0	$C_{12}H_2Br_8O$	Flame retardants (for ABS, HIPS, and LDPE)
Hexabromodiphenyl ether; Hexabromodiphenyloxide	36483-60-0	$C_{12}H_4Br_6O$	Flame retardants
Pentabromodiphenylehter; Pentabromodiphenyloxide; PentaBDE	32534-81-9	$C_{12}H_5Br_5O$	Flame retardants

• Tributyltin compounds (TBT) and triphenyltin compounds (TPT)

Note: Only tributyltin compounds and triphenyltin compounds belong to this category.
Dibutyltin compounds (DBT), diphenyltin compounds (DPT), 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	$C_{28}H_{56}O_4Sn_2$	
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	$Na_2Fe_5(Si_8O_{22})(OH)_2$	Insulators, fillers
Chrysotile	12001-29-5	$Mg_3Si_2O_5(OH)_4$	Insulators, fillers
Amosite	12172-73-5	$(Mg, Fe)_7Si_8O_{22}(OH)_2$	Insulators, fillers
Anthophyllite	77536-67-5	$(Mg, Fe)_7Si_8O_{22}(OH)_2$	Insulators, fillers
Tremolite	77536-68-6	$Ca_2Mg_5Si_8O_{22}(OH)_2$	Insulators, fillers
Actinolite	77536-66-4	$Ca_2(Mg, Fe)_5Si_8O_{22}(OH)_2$	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; Polyvinyl chloride and polyvinyl chloride 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, Sixth Edition

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零部件和材料中的环境管理物质　管理规定

（SS-00259 第 6 版　一般公开版）

SONY

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本书是索尼技术标准 SS-00259　第 6 版的一般公开版。

目　录

1. 目　的

本技术标准的目的是：透过明确构成索尼电子产品的零部件或装置等中所含的环境管理物质里的禁止使用物质、计划全废物质以及适用对象外项目，以实现防止该物质混入索尼电子产品中，同时遵守法令、保护地球环境以及减轻对生态系统的影响为目标而制定。

2. 适用范围

2.1 零部件和材料的适用范围

本技术标准适用于：索尼集团以及由索尼集团委托设计、制造的产品所包含的零部件、材料及其他物品。这些均必须符合本技术标准的规定。

适用零部件和材料等

- 半成品(功能单元、模块、板组件等的组装零部件等)
- 零部件(电气零部件、机械零部件、半导体器件、印刷线路板、记录媒体、包装材料、包装零部件)
- 螺丝
- 附件(遥控指挥器、鼠标、AC 适配器等，配合相关机器的附属品)
- 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
- 修理用零部件(对于已出货产品的修理用部分零部件，应按照另外的通知书执行)
- 在表 4.3a 中所定义的零部件交货人为了发送或保护货物所使用的包装材料
- 电池

2.2 产品的适用范围

(1) 由索尼集团设计・制造、销售、借阅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，且贴有索尼集团的商标进行销售、借阅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，由该第三者指定的零部件、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规定禁止使用或限制使用时，则必须遵照相关法令执行。

3. 术语的定义

本技术标准中所使用的术语定义如下:

(1) 环境管理物质

包含在零部件、装置等的物质中，由索尼判断对地球环境和人体存在着显著影响的物质。

(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

将该物质及其用途规定为: 禁止用于零部件和材料中。

(b) 2 级

表中规定的该日期到来时(即: 禁止供货时期之期限日)变更为「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零部件、材料中所含的物质及其用途。如果被判断为可以使用代替零部件、开发材料和代替技术并且引进该产品或技术时，即可变更为 2 级并且逐步实现全废的目标。

(d) 适用对象外

法令规定为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

含有是指: 无论是否有意，在所有产品的零部件、装置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，但实质上在半导体器件中其残存量极少时，这种情况不作为「含有」，而作为「杂质」处理。

(4) 杂质

杂质是指: 包含在天然材料中，作为工业材料使用时的精制过程中技术上不能完全去除的物质(natural impurity)，或者在合成反应过程中产生而技术上不能完全去除的物质。

原为「杂质」的物质，为了与主原料加以区别，并且为了改变材料的特性而使用时，称为「含有」处理。

(注)对于本技术标准中指定的允许浓度，在零部件、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

禁止向索尼供应零部件和材料的时期。

(6) 本技术标准中定义的塑料

－ 由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，也归为塑料处理。

4. 环境管理物质的管理标准

4.1 环境管理物质

本技术标准中列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表

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
有机氯化合物	多氯联苯(PCB) 多氯化萘(PCN) 多氯三联苯(PCT)
	短链型氯代烷烃(SCCP)
	其他有机氯化合物
有机溴化合物	多溴联苯(PBB)
	包含十溴联苯醚(DecaBDE)的多溴联苯醚(PBDE)
	其他有机溴化合物
三丁基锡化合物(TBT) 三苯基锡化合物(TPT)	
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	
氧化铍 铍青铜	
特定邻苯二甲酸盐(DEHP、DBP、BBP、DINP、DIDP、DNOP、DNHP)	
氢氟碳化合物(HFC)、全氟化碳(PFC)	

表 4.2　环境管理物质的主要对象和禁止供货时期

<table>
<tr><td colspan="3">物质名称：镉以及镉化合物</td></tr>
<tr><td colspan="3">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</td></tr>
<tr><td colspan="2">对象</td><td>禁止供货时期</td></tr>
<tr><td rowspan="3">1 级</td><td>・ 包装材料(参照 P.14)
・ 塑料(包括橡胶)材料中使用的稳定剂、颜料、染料
(电器配线的绝缘体、遥控指挥器・键、扎线带(cable tie)、电子元器件的外装树脂、外框(机壳)、标签、唱片等)
・ 涂料、墨水
・ 表面处理(电镀、无电解电镀等)、涂层
・ 照片胶卷
・ 日光灯(小型日光灯、直管日光灯)</td><td>立即执行</td></tr>
<tr><td>除「适用对象外」以外之所有用途。
例如，
・ 直流电动机、开关、继电器、断路器等电气接点
・ 温度保险丝的可熔体
・ 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)
・ 焊锡(镉含量超过 20 ppm 以上的焊锡)
・ 荧光显示装置中含有的荧光体、CdS 光导电池单元
・ 电阻(玻璃料)
等</td><td>立即执行
(从 2005 年 1 月 1 日开始)</td></tr>
<tr><td>・ 含锌金属(黄铜、熔融镀锌等)构成的零部件、部位中，镉的含量超过 100 ppm 的产品</td><td>立即执行
(从 2005 年 10 月 1 日开始)</td></tr>
<tr><td>适用对象外</td><td>・ 要求使用可靠性高的电气接点电镀而没有替代材料的产品
・ 光学玻璃、滤光玻璃</td><td></td></tr>
</table>

测定对象：塑料(包括橡胶)、涂料、墨水 允许浓度：不超过 5 ppm
测定标准： (1) 预处理 有关预处理方法主要有下列 4 种： 1.硫酸存在下的灰化法 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)] 3.采用硝酸、过氧化氢、盐酸的酸分解法(例如 EPA3050B Rev.2：1996) 4.采用硫酸、硝酸、过氧化氢的湿式分解法(例如 BS EN1122：2001) 等。 ※ 利用上述 4 种方法而发生沉淀物(不溶物)时，必须采用某种方法(碱溶融法等)使其完全溶解，制成溶液。 (2) 测定法 有关测定方法主要有下列 3 种： 1.电感耦合等离子体发射光谱法[ICP-AES(ICP-OES)]；例如 EN ISO 11885：1998 2.原子吸收分光光度法(AAS)；例如 EN ISO 5961：1995 3.电感耦合等离子体质谱法(ICP-MS) ・ 除上述之外，通过预处理和测定法的组合，如果可以保证镉的定量下限不超过 5 ppm 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。 (注) 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合作为预处理。 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。

物质名称：铅以及铅化合物		
金属、合金、无机化合物、有机化合物、无机盐、有机盐等含有铅元素的所有物质为对象范围		
对象		禁止供货时期
1 级	・ 包装材料(参照 P.14) ・ 用于印刷线路板的铅所使用的涂料、墨水	立即执行
	・ 零部件的外部电极、引线端子等的表面处理 (电气零部件 / 半导体器件 / 散热片等) ・ AC 适配器、电源线、连接电缆、遥控指挥器、鼠标、机器的外露部分所使用的塑料(包括橡胶)材料中的稳定剂、颜料、染料 ・ 机器的外露部分所使用的涂料、墨水	立即执行 (从 2004 年 4 月 1 日开始)

<table>
<tr><td rowspan="2">1 级</td><td>「3 级」和「适用对象外」以外的所有用途
例如，
・ 零部件的外部电极、引线端子等的表面处理中，内藏在 AC 适配器、遥控指挥器、半导体器件等中的零部件
・ 对铅不超过 85 wt%的有铅焊锡，焊锡中的铅含量超过 1000 ppm 的产品。
・ 含有超过允许浓度(*1)的各种合金(包括焊锡材料)
・ AC 适配器、电源线、连接电缆、遥控指挥器、鼠标、机器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
・ 机器的外露部位以外所使用的涂料、墨水
等</td><td>立即执行
(从 2005 年 1 月 1 日开始)</td></tr>
<tr><td>・ 使用无电解镀镍、无电解镀金等的无电解电镀的皮膜中，其铅含量超过 1000 ppm 的零部件</td><td>立即执行
(从 2006 年 2 月 1 日开始)</td></tr>
<tr><td>3 级</td><td>・ 使用无电解镀镍、无电解镀金等的无电解电镀的皮膜中，其的铅含量未超过 1000 ppm 的零部件</td><td></td></tr>
<tr><td>适用对象外</td><td>・ 零部件、装置的连接用高熔点焊锡(铅为 85 wt% 以上的有铅焊锡)
・ 电子陶瓷零部件【压电材料，介质材料、磁性材料(铁素体系)】
・ 光学玻璃、滤光玻璃
・ 显像管、电子元器件、荧光显示管所使用的玻璃材料
电子元器件中所使用的玻璃材料包括电阻、导电浆(银浆、铜浆)、粘结剂、玻璃料、密封材料等。
・ 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，铅的含量超过 80 wt%-但不超过 85 wt%的焊锡。
・ 连接集成电路板叩焊晶片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)。

(*1)各种合金的含铅允许浓度
<table><tr><td>合金的种类</td><td>含铅允许浓度</td></tr><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></table></td><td></td></tr>
</table>

测定对象：塑料(包括橡胶)、涂料、墨水 允许浓度：不超过 100 ppm
测定标准： (1)预处理 有关预处理方法主要有下列 4 种： 1.硫酸存在下的灰化法 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)] 3.采用硝酸、过氧化氢、盐酸的酸分解法(例如 EPA3050B Rev.2：1996) 4.采用硝酸、过氧化氢的湿式分解法 等。 ※ 利用上述 4 种方法而发生沉淀物(不溶物)时，必须采用某种方法(碱溶融法等)使其完全溶解，制成溶液。 (2)测定法 有关测定方法主要有下列 3 种： 1.电感耦合等离子体发射光谱法[ICP-AES(ICP-OES)]；例如 EN ISO 11885：1998 2.原子吸收分光光度法(AAS)；例如 EN ISO 5961：1995 3.电感耦合等离子体质谱法 (ICP-MS) ・ 除以上之外，通过预处理和测定法的组合，如果可以保证铅的定量下限不超过 30 ppm 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。 (注) 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合作为预处理。另外，EN 1122 也不适合作为对铅的预处理法。 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。

物质名称：汞以及汞化合物		
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	・ 包装材料(参照 P.14) ・ 涂料、墨水 ・ 计时器 ・ 使用汞作为接点的继电器、开关、传感器 ・ 塑料中的添加剂	立即执行
	・ 小型日光灯(液晶背光等)：每一支的含量为 5 mg 以上的产品 ・ 直管日光灯：每一支的含量为 5 mg 以上的产品 ・「适用对象外」以外之所有用途	立即执行 (从 2005 年 1 月 1 日开始)
适用对象外	・ 小型日光灯、直管日光灯以外的灯(高压汞灯等) ・ 小型日光灯：每一支的含量不超过 5 mg 的产品 ・ 直管日光灯：每一支的含量不超过 5 mg 的产品	

物质名称：六价铬化合物		
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		
对象		禁止供货时期
1 级	・包装材料(参照 P.14)	立即执行
	・作为零部件、材料的成分之涂料、墨水以及其他添加剂等中包含该用途时 ・在电镀、化学转化处理等的表面处理(螺丝、钢板等)过程中，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：多氯联苯(PCB)、多氯化萘(PCN)、多氯三联苯(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：短链型氯代烷烃(SCCP)		
以「碳链长为 10－13 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)、印刷线路板的用途。	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：其他有机氯化合物		
对象		禁止供货时期
3 级	・用于塑料的阻燃剂、增塑剂、印刷线路板等上的阻燃剂等用途	

物质名称：多溴联苯(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)的多溴联苯醚(PBDE)		
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
	· 使用 2002 年 12 月以前的模具所制造的零部件(限定为：出口欧洲以外国家的 TV、显示器的框体) 2003 年 1 月以后的新型模具零部件将禁止采用	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、印刷线路板等上的阻燃剂等用途	

物质名称：三丁基锡化合物(TBT)、三苯基锡化合物(TPT)		
对象		禁止供货时期
1 级	· 用于涂料、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	· 用于绝缘材、填料等所有用途	立即执行

<table>
<tr><td colspan="3">物质名称：特定偶氮化合物</td></tr>
<tr><td colspan="3">对象为按照 76/769/EEC 中引用的试验法进行偶氮化合物的分解所产生的表 4.2a 的胺,与表 4.2a 一览表中的胺</td></tr>
<tr><td colspan="2">对象</td><td>禁止供货时期</td></tr>
<tr><td>1 级</td><td>· 适用于与人体持续接触产品的人体接触部分(入耳式耳机、头戴式耳机、肩包的肩垫、皮带、绳索等)的颜料。</td><td>立即执行</td></tr>
<tr><td>3 级</td><td>· 用于不与人体持续接触制品或零部件 (遥控指挥器、胶垫、携带笔记本电脑专用包、鼠标等)</td><td></td></tr>
<tr><td colspan="3">试验法(参考)
分解偶氮化合物、萃取胺的方法有:
EN 14362-1: 2003 „ Textiles-Methods for the determination of certain aromatic amines derived from azo colorants
- Part 1: Detection of the use of certain azo colorants accessible without extraction“
CEN ISO/TS 17234:2003 „Leather-Chemical tests-Determination of certain azo colorants in dyed leathers“
EN 14362-2: 2003 „ Textiles-Methods for the determination of certain aromatic amines derived from azo colorants
- Part 2: Detection of the use of certain azo colorants accessible by extracting the fibres”</td></tr>
</table>

表 4.2a　特定胺化合物一览表

CAS No.	胺
92-67-1	4-氨基联苯
92-87-5	联苯胺
95-69-2	4-氯邻甲苯胺
91-59-8	2-萘胺
97-56-3	邻氨基偶氮甲苯
99-55-8	2-氨基-4-硝基甲苯
106-47-8	4-氯苯胺
615-05-4	2,4-二氨基苯甲醚
101-77-9	4,4'-二氨基二苯甲烷
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	2-甲氧基-5-甲基苯胺
101-14-4	4,4'-二氨基-3,3'-二氯二苯甲烷
101-80-4	4,4'-二氨基联苯醚
139-65-1	4,4'-二氨基二苯硫醚
95-53-4	邻甲苯胺
95-80-7	2,4-二氨基甲苯
137-17-7	2,4,5-三甲基苯氨
90-04-0	邻氨基苯甲醚
60-09-3	4-氨基偶氮苯

物质名称: 甲醛		
对象		禁止供货时期
1 级	· 出口欧州产品中所使用的纤维板、木屑板以及胶合板的木工产品(扬声器、机架等)	立即执行
	· 非出口欧州产品中所使用的纤维板、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)
标准值(排放浓度): 采用如下方法中的其中一种方法 1)测试室法　在空气中浓度 12 m^3、1m^3或 0.0225 m^3的气密试验槽中不超过 0.1 ppm(不超过 0.124mg/m^3) 2)穿孔法　・未经表面处理的木屑板 100g 中不超过 6.5 mg(6 个月的平均值) ・未经表面处理的纤维板 100g 中不超过 7.0 mg(6 个月的平均值) 或 ・未经表面处理的木屑板、纤维板 100g 中不超过 8.0 mg(按照 EN120 的 1 次测定值) 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 来确认平均值、最大值)		
测定法: 测试室法 EN 717-1:2004 (Wood based panels; determination of formaldehyde release; formaldehyde emission by the chamber method) 穿孔法 EN 120 (Wood based panels; determination of formaldehyde content; extraction method called perforator method; EN 120:1992) 干燥器法　JIS A 5905 (Fibreboards)、JIS A 5908(Particleboards)		

物质名称: 聚氯乙烯(PVC)以及聚氯乙烯混合物		
对象		禁止供货时期
1 级	· 非接触 IC 卡(FeliCa)用基材	立即执行 (从最初起就不使用)
	· 计算机、数码相机、摄像机、便携式多媒体播放器等所使用的配件背包、专用携带配件盒、配件腰包的材料和涂装剂(业务用除外)	立即执行
	· 捆绑附件、连接电源线的扎线带(cable tie) (聚氯乙烯制)	立即执行 (从 2002 年 7 月 1 日开始)
	· 用于产品以及与产品一同包装的附件等的包装材(袋、胶带、纸箱、泡罩包装等)	立即执行 (从 2005 年 1 月 1 日开始)
	· 热收缩软管	立即执行 (从 2005 年 4 月 1 日开始)
	· 扁型软电线(FFC) · 用于木制扬声器外装的片材(Sheet)、层压板 · 绝缘板、装饰板、标签、片材(例如: 绝缘 Sheet、保护膜等)、层压板	立即执行 (从 2007 年 4 月 1 日开始)

物质名称：聚氯乙烯(PVC)以及聚氯乙烯混合物		
对象		禁止供货时期
3 级	・连接电缆(1)：便携型机器用电缆(入耳式耳机、头戴式耳机、耳戴式麦克风用的电缆等) ・机器内外部使用的绝缘和保护用的涂层、绝缘软管、携带用挂带(carrying belt)、隔离柱(spacer)、holder、套管・保护盖(cover)、配线槽(duct)等 ・专门向日本、美国、加拿大交货的电源线(包括插头、连接器、电线套筒)：[2P、3P] ・带电缆的连接器等使用线材的零部件、马达引线等机体内布线用线材 ・连接电缆(2)：USB 用电缆、i.LINK 用电缆、录像机电缆、AC 适配器次级引线、扁平线、多芯绞合型电缆、扬声器电缆等 ・束线、加工线材(同轴电缆、扁平线、双重屏蔽电线、屏蔽线等) ・业务用电子产品用配件背包、专用携带配件盒、配件腰包的材料和涂装剂 ・画图纸 ・电容器/电源开关/保险丝用途的绝缘盖 ・零部件交货人的零部件包装用托盘、料条(装运管)、带盘、包装卷带等 ・安装车载机器用的吸盘 ・使用于机器内部的配线用夹(用聚氯乙烯涂装过的金属物品) 「1 级」以及「适用对象外」等项目以外的零部件	
适用对象外	・树脂用粘结剂 ・高压塑料电线 ・绝缘带 ・扬声器线圈 ・电源线(管理级别 3 级以外的供货时) ・于 1 级～3 级中被指定的零部件以外的使用氯乙烯共聚以及聚氯乙烯与其他聚合材料混合物的零部件 ・变压器引线部(清漆浸渍的部分) ・卷线 ・AWG36 以上的极细电线 ・在业务用机器中不能使用通用产品时的电缆(广播电视台用摄像机电缆、麦克风电缆等)	

物质名称：氧化铍		
对象		禁止供货时期
2 级	・所有的用途	从 2008 年 4 月 1 日开始

物质名称：铍青铜		
对象		禁止供货时期
3 级	・所有的用途	

物质名称：特定邻苯二甲酸盐(DEHP、DBP、BBP、DINP、DIDP、DNOP、DNHP)		
对象为表 4.2b 的物质		
对象		禁止供货时期
3 级	・作为用于电缆的被覆、电源线的被覆及该部位的插头或连接器部位的聚氯乙烯树脂的可塑剂用途	

表 4.2b 特定邻苯二甲酸盐(邻苯二甲酸盐)一览表

简称	CAS 号码	名称
DEHP	117-81-7	邻苯二甲酸(2-乙基己基酯)
DBP	84-74-2	邻苯二甲酸二丁酯
BBP	85-68-7	邻苯二甲酸丁苄酯
DINP	28553-12-0 68515-48-0	邻苯二甲酸二异壬酯
DIDP	26761-40-0 68515-49-1	邻苯二甲酸二异癸酯
DNOP	117-84-0	邻苯二甲酸二正辛酯
DNHP	84-75-3	邻苯二甲酸二己酯

物质名称：氢氟碳化合物(HFC)、全氟化碳(PFC)		
对象		禁止供货时期
3 级	・用于冷媒、隔热材料等所有的用途	

4.2 有关包装材料的追加事项

4.2.1 包装材料的定义

包装材料是指：生产者为了将产品(包括原材料到加工品)送到使用者或消费者手中，用「装入」、「保护」、「使用」、「运送」、「交付」等方式时所使用的各类材料所制作成的产品。

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，但是被回收且再次使用的物流箱等的包装物除外。」

表 4.3 有关包装材料的追加事项

<table>
<tr><td colspan="3">物质名称：重金属
(镉、铅、六价铬、汞)</td></tr>
<tr><td colspan="3">除 4.1 项(表 4.2)的规定外，还需依据法律规定，并且符合以下条件</td></tr>
<tr><td colspan="2">对象</td><td>禁止供货时期</td></tr>
<tr><td>1 级</td><td>・ 表 4.3a 记述的包装材料为对象</td><td>立即执行</td></tr>
<tr><td>适用对象外</td><td>・ 零部件交货人所使用的物流箱除外</td><td></td></tr>
<tr><td colspan="3">允许浓度：
・ 汞、镉、六价铬、铅等重金属的允许浓度，必须依照包装时的各零部件材料、墨水、涂料等的构成，其重金属合计不能超过 100 ppm。但是，塑料(包括橡胶)、涂料、墨水的部位中的镉、铅的允许浓度，应符合镉和镉化合物及铅和铅化合物的规定。
【主要塑料部位：提手、塑料袋、缓冲材、薄膜、托盘、带盘、胶带、料条(装運管(包括止动器))、打包带等】</td></tr>
<tr><td colspan="3">(1)对于六价铬，首先对总铬量进行分析，确认 4 种元素合计是否未超过 100 ppm。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、水银的合计含量未超过 100 ppm。当镉、铅、水银的合计含量未超过 100 ppm 时，应对铬是否为六价铬进行检测，最终应确认为：没有检测到六价铬。

测定标准：
(1)预处理
关于镉、铅，应依照塑料中的镉(P.5)、铅(P.7)的方法进行判定。
对于总铬，应依照塑料中的铬(P.5)的方法为进行判定。
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.采用回流冷凝器分解烧瓶(基耶达尔法)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)测定法
对于镉、铅、总铬，应依照塑料中的镉(P.5)、铅(P.7)的方法进行判定。
对于汞，其方法与塑料中的镉(P.5)、铅(P.7)相同，但是如果估计含有低浓度混入时，则适合采用还原气化原子吸光法、或是带有氢气发生装置的 ICP-AES(ICP-OES)、ICP-MS 法进行分析。</td></tr>
</table>

六价铬的检测判定
(※关于包装材料，镉、铅、汞、总铬的 4 种元素合计达到 100 ppm 以上时的确认方法)
检测方法:
(1) 预处理
　溶出法[沸腾水萃取法、碱萃取法 P(例如 EPA 3060A)]
(2) 测定方法
　紫外-可见光分光光度法(例如 EPA 7196A)

- 如果预处理和测定法的各种组合，可以保证其定量下限分别为汞不超过 5 ppm、镉不超过 5 ppm、总铬不超过 5 ppm、铅不超过 30 ppm 时，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)本表不包含所有的包装材料。

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)	各种材料制成的个装箱、辅助纸箱、主纸箱
2.	缓冲材	
3.	防护带(片材(sheet))	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.	泡罩包装	
7.	薄膜	包括液晶显示器表面等贴的防护膜
8.	对折泡壳	
9.	隔离板	
10.	印刷墨水	用于包装材料的印刷用墨水
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.	U 形钉	
13.	标签	像条形码标签那样，在索尼管理下贴到包装零部件上的标签
14.	接头(joint)	纸箱接头等
15.	打包带	PP 打包带等
16.	挂钩(hand tab)	
17.	提手	提手及其构成零部件
18.	外框	木框等
19.	热收缩薄膜	
20.	瓶	
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/袋	用于录像带、CD、MO、MD、DVD 等的盒子、袋、芯轴等，被视为产品的一部分
2.	检索卡片/标签	附属于 CD 等记录媒体的检索卡片、标签等
3.	专用携带配件盒/配件腰包	附属于耳机、照相机、WALKMAN®随身听等，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

用于装置、半导体以及其他零部件的包装材料		
PACKAGING		
1.	料条(装运管)	用于 IC 等的运输用
2.	止动器	
3.	托盘	
4.	带盘	

用于物资流通时的包装材料		
PACKAGING		
1.	板条托盘	包括滑托板的木制、塑料制、纸制等 One-Way 规格的托盘
2.	板条箱	
3.	缠绕膜(拉伸膜)	防止货物变形等用
4.	木制集装箱	
5.	辅助包装用包装材料	用于运输零部件时的辅助包装用的纸箱、缓冲材、胶带等
6.	打包带/绳	PP 打包带等
NOT PACKAGING		
1.	轮船和空运集装箱	轮船输送用 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)

4.3.1 关于本技术标准中的「电池」及「电池组」的定义

「电池」是指：单一的一次电池组电池(primary battery cell)、或是单一的二次电池组电池(secondary battery cell)。

「电池组」是指：由复数个「电池」所组成的，或是由一个或复数个「电池」装进外框里所组成的电池组。如果端子结构或保护回路等包含在同一外框时，将其作为「电池组」的一部分。

用于「电池组」的电池在此作为「电池」的项目，适用于表 4.4 中所记载的规定。

有关「电池」及「电池组」的内容，依照本技术标准 4.1 及 4.2 的规定进行。

表 4.4 有关电池的事项

<table>
<tr><td colspan="4">物质名称：重金属
(镉、铅、汞)</td></tr>
<tr><td colspan="4">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。</td></tr>
<tr><td colspan="3">对象</td><td>禁止供货时期</td></tr>
<tr><td rowspan="3">1
级</td><td>Cd</td><td>・所有的镍/镉电池。</td><td>立即执行(从 2007 年 1 月 1 日开始)</td></tr>
<tr><td>Pb</td><td>・「电池」，其含铅量占电池总重量的 0.4 %以上的电池。
・「电池组」，其含铅量占电池总重量的 0.4 %以上的电池。
・小型密封铅蓄电池</td><td>立即执行(从 2005 年 1 月 1 日开始)</td></tr>
<tr><td>Hg</td><td>・钮扣电池,其汞含量占电池总重量的 2 %以上的电池。
・钮扣电池以外的
「电池」，其汞含量占电池总重量的 0.0005 %以上的电池。
「电池组」，其汞含量占电池总重量的 0.0005 %以上的电池。
但是，供应中国使用的锰电池和碱锰电池则为 0.0001 %以上。</td><td>立即执行</td></tr>
</table>

附属资料

1. 世界各国和地区就物质使用所实施的法律法规(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
・多氯联苯(PCB)、多氯化萘(PCN)、多氯三联苯(PCT)
・短链型氯化萘(SCCP)
・多溴联苯(PBB)
・多溴联苯醚(PBDE)
・三丁基锡化合物(TBT)、三苯基锡化合物(TPT)
・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：本附属资料 1 和 2 中所列举的法令及化学物质仅为示例，并不是汇总全部的内容。也就是说，某些化学物质可能存在着本表以外的其他名称。

1. 世界各国和地区就物质使用所实施的法律法规(主要示例)

注)以下为截止 2007 年 3 月，已确认的内容。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)以及其他的修订版
	欧盟各国管制规定(91/338/EC)以及其他的修订版
	欧盟 RoHS 指令(案)(2002/95/EC) 以及其他的修订版
	欧盟 电池规程建议(2006/66/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 RoHS 指令(案)(2002/95/EC)以及其他的修订版
	欧盟 电池规程建议(2006/66/EEC)
	瑞士 关于降低化学物质风险的法令 等
	丹麦 指令 No.1012 以及其他的修订版 等
汞以及汞化合物	欧盟 RoHS 指令(案)(2002/95/EC)以及其他的修订版
	欧盟 电池规程建议(2006/66/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 RoHS 指令(案)(2002/95/EC)以及其他的修订版
	瑞士 关于降低化学物质风险的法令 等
多氯联苯(PCB)、 多氯化萘(PCN)、 多氯三联苯(PCT)	欧盟规程建议(76/769/EEC) 以及其他的修订版
	日本 化学物质审查管制规定法 第 1 种特定化学物质 等
短链型氯代烷烃(SCCP)	挪威 关于对特定有害化学物质使用等的限制 等
多溴联苯(PBB)	欧盟规程建议(76/769/EEC)以及其他的修订版
	欧盟 RoHS 指令(案)(2002/95/EC)以及其他的修订版
	瑞士 关于降低化学物质风险的法令 等
多溴联苯醚(PBDE)	欧盟规程建议(76/769/EEC)以及其他的修订版
	欧盟 RoHS 指令(案)(2002/95/EC) 以及其他的修订版
	瑞士 关于降低化学物质风险的法令 等
三丁基锡化合物(TBT)、 三苯基锡化合物(TPT)	日本 化学物质审查管制规定法 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
特定偶氮化合物	欧盟规程建议(76/769/EEC)以及其他的修订版等
甲醛	德国 化学品禁止规则(ChemVerbotsV)
	丹麦 指令 No.289 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)以及其他的修订版
	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	$CdCl_2$	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	$Cd(NO_3)_2$	着色剂、电池、相片
四水硝酸镉	Cadmium nitrate tetrahydrate	10022-68-1	$Cd(NO_3)_2 \cdot 4H_2O$	
硫酸镉	Cadmium sulfate	10124-36-4	$CdSO_4$	镉电池、电镀光泽剂、试剂
硬脂酸镉	Cadmium stearate	2223-93-0	$Cd(C_{18}H_{35}O_2)_2$	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、电气接口
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_2	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_2O_3	
四氧化三铅；四三氧化铅；铅丹；光明丹	Lead (II,IV) oxide	1314-41-6	Pb_3O_4	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_6	
二氟化铅；氟化亚铅；氟化铅(II价)	Lead (II) fluoride	7783-46-2	PbF_2	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	$PbCl_2$	
四氯化铅；氯化铅(IV价)	Lead (IV) chloride;	13463-30-4	$PbCl_4$	
碘化亚铅；碘化铅(II价)	Lead (II) iodide	10101-63-0	PbI_2	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	$Pb(CN)_2$	防锈颜料
氟化硼铅	Lead fluoroborate	13814-96-5	$Pb(BF_4)_2$	电镀浴(液)、耐蚀表面处理
氟化硅铅	Lead fluosilicate	25808-74-6	$PbSiF_6$	电镀浴(液)、铅精炼
硝酸铅	Lead nitrate	10099-74-8	$Pb(NO_3)_2$	光学玻璃
碳酸铅	Lead carbonate	598-63-0	$PbCO_3$	
氢氧碳化铅；氯化碳酸铅；铅白	Lead hydroxycarbonate	1344-36-1	$(PbCO_3)_2$ $Pb(OH)_2$	颜料、聚氯乙烯稳定剂
过氯酸铅	Lead perchlorate	13637-76-8	$Pb(ClO_4)_2$	
硫酸亚铅；硫酸铅(II价)	Lead (II) sulfate	7446-14-2; 15739-80-7	$PbSO_4$	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_4SO_7	颜料
正磷酸铅；磷酸铅	Lead (II) phosphate	7446-27-7	$Pb_3(PO_4)_2$	塑料稳定剂
硫氰酸铅	Lead thiocyanate	592-87-0	$Pb(SCN)_2$	染色、火柴
三水醋酸亚铅；三水醋酸铅(II价)	Lead(II) acetate, trihydrate	6080-56-4	Pb(CH3COO)2・3H2O	
醋酸亚铅；醋酸铅(II价)；铅糖	Lead(II) acetate	301-04-2	Pb(CH3COO)2	
醋酸二铅；醋酸铅(IV价)	Lead(IV) acetate	546-67-8	Pb(CH3COO)4	

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
油酸盐铅	Lead oleate	1120-46-3	$Pb[CH_3(CH_2)_7CH=CH(CH_2)_7COO]_2$	润滑剂、硬化剂等
硬脂酸铅	Lead stearate	7428-48-0	$Pb(C_{17}H_{35}COO)_2$	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	$Pb(BO_2)_2 \cdot H_2O$	油漆的干燥剂
偏硅酸铅；硅酸铅	Lead metasilicate	11120-22-2; 10099-76-0	$PbSiO_3$	陶瓷
亚锑酸铅	Lead antimonate	13510-89-9	$Pb_3(SbO_4)_2$	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	$PbHAsO_4$	
亚砷酸铅；偏亚砷酸铅	Lead(II)arsenite	10031-13-7	$Pb(AsO_2)_2$	杀虫剂
氯酸铅;铬黄;金黄;活黄; 毛黄	Lead chromate; chrome yellow	1344-37-2	$PbCrO_4$	颜料、涂料、墨水
钼酸铅	Lead molybdate	10190-55-3	$PbMoO_4$	颜料
铅酸钙	Calcium plumbate	12013-69-3	Ca_2PbO_4	氧化剂
四甲基铅; 四甲铅；TML	Tetramethyllead	75-74-1	$Pb(CH_3)_4$	
四乙基铅; 四乙铅；TEL	Tetraethyllead	78-00-2	$Pb(C_2H_5)_4$	
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			
氧化亚银；氧化银(I价)	Mercury(I)oxide	15829-53-5	Hg_2O	
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_2Cl_2	电极、颜料
氯化二汞；氯化汞(II价)；升汞	Mercury(II)chloride	7487-94-7	$HgCl_2$	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	$Hg(NO_3)_2$	油毛毡、催化剂
硫酸亚汞；硫酸汞(I价)	Mercury(I)sulfate	7783-36-0	Hg_2SO_4	电池
雷酸二汞；雷酸汞(II价)	Mercury(II) fulminate	628-86-4	$Hg(ONC)_2$	
醋酸二汞；醋酸汞(II价)	Mercury(II)acetate	1600-27-7	$Hg(CH_3COO)_2$	
甲基汞盐	Methylmercury salts	e.g. 22967-92-6	CH_3HgX ; X=Cl,Br,I,OH, etc.	防霉剂
乙烷基汞盐	Ethylmercury salts		C_2H_5HgX ; X=Cl,Br,I,OH, etc.	防腐剂、杀菌剂
丙基汞盐	Propylmercury salts		C_3H_7HgX ; X=Cl,Br,I,OH, etc.	
苯基汞盐	Phenylmercury salts		C_6H_5HgX ; X=Cl,Br,I,OH, etc.	防腐剂、杀菌剂
甲基氧乙烷基汞盐	Methoxyethylmercury salts		$CH_3OC_2H_4HgX$; X=Cl,Br,I,OH, etc.	杀菌剂、防霉剂
二烃基组汞	Dialkylmercury		R_2Hg ; R=alkyl group (C_nH_{2n+1})	
二苯基汞	Diphenylmercury	587-85-9	$(C_6H_5)_2Hg$	
其他汞化合物	Other mercury compounds			

●六价铬化合物

1．所属物质的例子

仅含有六价的铬元素的物质才属于此类。

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_3	颜料、催化剂、电镀、鞣皮
铬酸锂	Lithium chromate	14307-35-8	Li_2CrO_4	防腐剂
铬酸钠	Sodium chromate	7775-11-3	Na_2CrO_4	防锈、鞣皮
铬酸钾	Potassium chromate	7789-00-6	K_2CrO_4	颜料、墨水、鞣皮
氯铬酸钾；三氧代氯酸钾	Potassium chlorochromate	16037-50-6	$K[CrO_3Cl]$	
铬酸铵	Ammonium chromate	7788-98-9	$(NH_4)_2CrO_4$	相片、催化剂
铬酸铜	Copper chromate	13548-42-0	$CuCrO_4$	媒染剂
铬酸镁	Magnesium chromate	13423-61-5	$MgCrO_4$	防锈、表面处理
铬酸钙；钙铬黄	Calcium chromate	13765-19-0	$CaCrO_4$	颜料、墨水、鞣皮
铬酸锶	Strontium chromate	7789-06-2	$SrCrO_4$	颜料、防锈
铬酸钡	Barium chromate	10294-40-3	$BaCrO_4$	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	$PbCrO_4$	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	$ZnCrO_4$	颜料、防腐剂
重铬酸钠；重铬酸钠	Sodium dichromate; sodium bichromate	10588-01-9	$Na_2Cr_2O_7$	颜料、防腐、相片、鞣皮
重铬酸钾	Potassium dichromate; potassium bichromate	7778-50-9	$K_2Cr_2O_7$	颜料、相片、电镀、电池、鞣皮
重铬酸铵	Ammonium dichromate; ammonium bichromate	7789-09-5	$(NH_4)_2Cr_2O_7$	颜料、相片、催化剂
重铬酸钙	Calcium dichromate; calcium bichromate	14307-33-6	$CaCr_2O_7$	防腐、催化剂
重铬酸锌	Zinc dichromate; zinc bichromate		$ZnCr_2O_7$	颜料
其他六价铬化合物	Other hexavalent chromium compounds			

●多氯联苯(PCB)、多氯化萘(PCN)、多氯三联苯(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；多氯联苯；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；多氯化萘；氯化萘	PCN; polychlorinated naphthalenes		$C_{10}H_{8-x}Cl_x$ (x≧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; 多氯三联苯	PCT; polychlorinated terphenyls	61788-33-8	$C_{18}H_{14-x}Cl_x$ (x=1-14)	润滑剂、防腐剂、涂料

●短链型氯代烷烃 (SCCP)

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	Short-chain Chlorinated paraffins C10-13	e.g. 85535-84-8		增塑剂、阻燃剂

●多溴联苯 (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

●多溴联苯醚(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; decabromodiphenyloxide; 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; octabromodiphenyloxide; 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; hexabromodiphenyloxide	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; pentabromodiphenyloxide; PentaBDE	32534-81-9	$C_{12}H_5Br_5O$	阻燃剂

●三丁基锡化合物(TBT)、三苯基锡化合物(TPT)

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(DBT)、二苯基锡化合物(DPT)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	$(C_4H_9)_3SnBr$	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	$C_{24}H_{54}OSn_2$	杀菌剂
三苯基锡	Triphenyl tin	668-34-8	$(C_6H_5)_3Sn$	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	$(C_6H_5)_3SnCl$	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	$(C_6H_5)_3SnOH$	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’-dimethyldithiocarbamate; Stannane, [[(dimethylamino)thiomethyl]thio]triphenyl-	1803-12-9	$(C_6H_5)_3Sn(CH_3)_2NCS_2$	
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	$(C_6H_5)_3SnF$	
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	$(C_6H_5)_3SnOCOCH_3$	
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		

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)triphenylstannane	7094-94-2	$(C_6H_5)_3SnOCOCH_2Cl$	
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)2,3一二溴丁二酸盐	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	$(C_4H_9)_3SnOCOCH_3$	
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)stannane	3090-36-6	$(C_4H_9)_3SnC_{12}H_{23}O_2$	
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	(C6H4)(COO)2 ([C4H9]3Sn)2	
三丁基锡=磺酸盐; 三丁基锡磺酸盐; 磺酸三丁羟基黄锡	Tributyl tin sulfamate; Stannane, [(aminosulfonyl)oxy]tributyl-	6517-25-5	(C4H9)3SnSO3NH2	
双（三丁基锡）=马来酸盐	Bis(tributyl tin) maleate	14275-57-1 24291-38-3	C28H5604Sn2	
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	(C4H9)3SnCl	

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＝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； 三丁基锡酪氨盐； 三丁基锡酪氨酸盐	[1R-(lalpha,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	$C_{32}H_{56}O_2Sn$	
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	$Na_2Fe_5(Si_8O_{22})(OH)_2$	绝缘体、填料
温石棉	Chrysotile	12001-29-5	$Mg_3Si_2O_5(OH)_4$	绝缘体、填料
铁石棉	Amosite	12172-73-5	$(Mg,Fe)_7Si_8O_{22}(OH)_2$	绝缘体、填料
直闪石	Anthophyllite	77536-67-5	$(Mg,Fe)_7Si_8O_{22}(OH)_2$	绝缘体、填料
透闪石	Tremolite	77536-68-6	$Ca_2Mg_5Si_8O_{22}(OH)_2$	绝缘体、填料
阳起石	Actinolite	77536-66-4	$Ca_2(Mg,Fe)_5Si_8O_{22}(OH)_2$	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; polyvinyl chloride and polyvinyl chloride blends	e.g. 9002-86-2		氯乙烯树脂

（注意事项）
索尼技术标准 SS-00259 零部件和材料中的环境管理物质 管理规定的修订或修改，有可能不提前预告而进行内容的变更。

零部件和材料中的环境管理物质　管理规定
（SS-00259　第 6 版一般公开版）

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