

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

The 3rd edition of SS-00259 (excerpts)

SONY

(Notice)

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1. PURPOSE

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

- 1) To prevent the above-mentioned substances from being used for Sony 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 products

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

2.2 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 their design and production.

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 controllers, AC adapters, and other accessories with which you can use products)
- Materials constituting subsidiary parts and materials (e.g. adhesives, adhesive tapes, and soldering materials) used for products
- Instruction manuals
- Repair parts (Sony will later issue a notice describing more details.)
- Packaging materials that parts suppliers use for delivery and protection (e.g. trays, reels, sticks, bags, cushions, staples, sheets, wraps, tapes, labels, corrugated cardboard, wooden frames, vinyl ties, and inks or paints for printing)

Regarding the substances and/or their purposes whose use is banned by regional or country laws and ordinances, the laws and ordinances must be observed and followed even though the substances or their purposes are not clearly regulated in this Standard.

3. DEFINITIONS OF TERMS

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

- 1) "Environment-related Substances to be Controlled ('The Controlled Substances')"
Among the substances contained in parts and devices, "Environment-related Substances to be Controlled ('The Controlled Substances')" are those which, according to Sony's judgment, have significant environmental-impact on both humans and the globe.
- 2) Management standards
To manage the above-mentioned substances, the following three levels are used.
 - a) Level 1
The substances and/or their purposes classified at this level are those whose use must be banned immediately.
 - b) Level 2
The substances and/or their purposes classified at 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 table will be classified at Level 1 and must not be contained in parts and materials.
 - c) Level 3
No periods or targets for reduction are currently set for the substances and purposes classified at this level. If Sony identifies alternative substances for parts and materials and these are appropriate substitutes for the substances listed in this Standard, Sony will actively introduce and use the alternative substances.
- 3) Contained
"Contained" is a situation in which a substance is added to, blended with, fills up, or adheres to (1) the parts or devices employed in products, or (2) 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.")
- 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 technically be removed in a refining process totally (i.e. natural impurities); and
 - b) One generated in a synthesis process, the total removal of which is technically impossible.Additionally, 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."
Furthermore, 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.
When the allowable concentration of a "Controlled Substance" is specified in this Standard, the concentration must be observed even if the substance, as an "Impurity," mingles with or adheres to parts or devices.
- 5) The date on or after which Sony won't accept the targets
This indicates the date on or after which Sony won't accept the parts and/or materials specified in the corresponding column.
- 6) Plastics defined in SS-00259
– Materials and raw materials composed of synthetic high-molecular polymers –
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 (‘The Controlled Substances’)”**

Refer to Table 4.1 of “Environment-related Substances to be Controlled” regulated in this Standard.

Table 4.1 List of “Environment-related Substances to be Controlled (‘The 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)
	Chlorinated paraffins (CP)
	Other chlorinated organic compounds
Brominated organic compounds	Polybrominated biphenyls (PBB)
	Polybrominated diphenylethers (PBDE)
	Other brominated organic compounds
Organic tin compounds (tributyl tin compounds, triphenyl tin compounds)	
Asbestos	
Azo compounds	
Formaldehyde	
Polyvinyl chloride (PVC) and PVC blends	

Table 4.2 Main “Targets” and “The date on or after which Sony won’t accept the targets” regarding “The Controlled Substances”

Substances: Cadmium and cadmium compounds		
All metals, alloys, inorganic compounds, metal-organic compounds, inorganic salts, organic salts, and other substances		
Targets		The date on or after which Sony won’t accept the targets
Level 1	<ul style="list-style-type: none"> - Packaging materials (Refer to p. 12.) (e.g. handles, cushions, wraps, foil, trays, reels, tapes, paints, inks, polyethylene bags, magazine sticks [including stoppers], bulk cases, and vinyl ties) - The stabilizers, pigments, or dyes used for plastics (including rubber) materials (e.g. labels, cabinets, phonograph records, vinyl ties, the keys of remote controllers, the outer plastic resins of electrical parts, and the insulators of electrical wiring) - Paints, inks - Surface treatment (e.g. plating), coating Exemption: Plating of electrical contacts, for which high reliability is required and which has no alternative materials, is classified at Level 3. - Photographic films - Fluorescent lamps (small-sized ones, straight-tube ones) 	Sony has been declining to accept them.
	<ul style="list-style-type: none"> - The nickel and NiCd batteries that are accepted as new parts However, Sony won’t accept all nickel and NiCd batteries in or after January 2007. 	Sony has been declining to accept them since April 1, 2003.
Level 2	<p>All purposes except those classified at Level 3 Typical examples are given below.</p> <ul style="list-style-type: none"> - 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 20 ppm or more) - CdS-photocells and the phosphors contained in fluorescent display devices - Resistor elements (glass frit) <p>Note) Cadmium contained in metal parts (e.g. zinc die-casting) is regarded as an “Impurity.” Therefore, their cadmium concentrations shall be disregarded unless cadmium is intentionally added to them.</p>	January 1, 2005
Level 3	<ul style="list-style-type: none"> - The plating of electrical contacts, for which high reliability is required and which has no alternative materials - Optical glass, filter glass 	

Allowable concentration: Less than 5 ppm for plastics (including rubber), paints, and inks
Standards for measurement
1) Pre-conditioning * Typical pre-conditioning 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 such as EN 13346:2000 and EPA 3052:1996); (3) An acid decomposition method under the existence of sulfuric acid or hydrogen-peroxide water (e.g. EPA3050B Rev.2:1996); and (4) A wet decomposition method under the existence of sulfuric acid, nitric acid, or hydrogen-peroxide water (e.g. BS EN 1122:2001). * If precipitates (insoluble matter) are produced, dissolve them totally by taking some means (e.g. alkali dissolution).
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 ISO5961:1995); and (3) Inductively Coupled-Plasma Mass Spectroscopy (ICP-MS). - If a combination of a pre-conditioning method and a measurement method can guarantee that the lower determination limit of cadmium is less than 5 ppm, the combination is also applicable. Any one of the measurement methods above (except AAS) enables you to analyze cadmium and lead simultaneously. Note: EN71-3:1994, an elution method, is not applicable. JIS K0102-55, a test for industrial sewage, specifies measurement methods only; therefore you must specify the pre-conditioning method that is actually applied.

Substances: Lead and lead compounds		
All metals, metal alloys, inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances		
	Targets	The date on or after which Sony won't accept the targets
Level 1	- Packaging materials (Refer to p. 12.) - The paints, pigments, and inks containing lead, which are used for PWBs - The batteries (excluding small-size sealed acid-ones) and battery packs whose lead content, in proportion to the total weight of each one, is 0.4% or more	Sony has been declining to accept them.
	- The small-size sealed lead-acid batteries that are accepted as new parts However, all small-size sealed lead-acid batteries must not be received in or after January 2005.	Sony has been declining to accept them since April 1, 2003.
Level 2	- 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 controllers, and power supply cords - The paints and inks used for outer and exposed areas of devices	April 1, 2004

<p>Level 2</p>	<p>All purposes except those classified at Level 3 Typical examples are given below.</p> <ul style="list-style-type: none"> - The surface coatings for the external electrodes, lead wires, etc. of the parts contained in AC adaptors, remote controllers, semiconductor devices, etc. - Of the types of leaded solder, those that satisfy both of the following conditions: <ul style="list-style-type: none"> (1) Leaded solder that contains less than 85 wt% of lead; and (2) Leaded solder whose lead concentration is 1 000 ppm or more - All kinds of alloys (including solder materials) whose individual lead/lead compound concentration exceeds the regulated allowable concentration (Refer to the table in Level 3.) - 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 controllers, and power supply cords - The paints and inks used for areas other than the outer and exposed ones of devices 	<p>January 1, 2005</p>										
<p>Level 3</p>	<ul style="list-style-type: none"> - High-melting point solder for internal connections used for parts and devices (the leaded solder whose lead content is at least 85 wt%) - Electronic ceramic parts (e.g. piezoelectric materials, dielectric ones, and magnetic ones [ferrites]) - Optical glass, filter glass - Stabilizers used for electroless gold plating as well as electroless nickel plating and lead contained in additives - Glass materials used for electrical parts, cathode-ray tubes, or vacuum fluorescent displays The above glass materials include adhesives, resistor elements, glass frit, conductive pastes (silver or copper ones), and sealing materials. - Solder pastes used under C4 (Controlled Collapse Chip Connection) bumps - The batteries (excluding small-size sealed lead-acid ones) 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 which are used for plastics (including rubber), paints, and inks and which are classified at Level 1 or 2 are subject to the corresponding regulations. - Allowable concentration of lead as an additive in the following alloys: <table border="1" data-bbox="320 1424 1158 1675"> <thead> <tr> <th>Type of alloy</th> <th>Allowable content of lead</th> </tr> </thead> <tbody> <tr> <td>Steel</td> <td>Less than 0.35 wt%</td> </tr> <tr> <td>Aluminum alloys</td> <td>Less than 0.4 wt%</td> </tr> <tr> <td>Copper alloys (including brass and phosphor bronze)</td> <td>Less than 4 wt%</td> </tr> <tr> <td>Solder</td> <td>Less than 1 000 ppm</td> </tr> </tbody> </table>	Type of alloy	Allowable content of lead	Steel	Less than 0.35 wt%	Aluminum alloys	Less than 0.4 wt%	Copper alloys (including brass and phosphor bronze)	Less than 4 wt%	Solder	Less than 1 000 ppm	
Type of alloy	Allowable content of lead											
Steel	Less than 0.35 wt%											
Aluminum alloys	Less than 0.4 wt%											
Copper alloys (including brass and phosphor bronze)	Less than 4 wt%											
Solder	Less than 1 000 ppm											

Allowable concentration: Less than 100 ppm for plastics (including rubber), paints, and inks
Standards for measurement
1) Pre-conditioning* Typical pre-conditioning 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. EN 13346:2000 and EPA 3052:1996); (3) An acid decomposition method under the existence of sulfuric acid or hydrogen-peroxide water (e.g. EPA3050B Rev.2:1996); and (4) A wet decomposition method under the existence of sulfuric acid, nitric acid, or hydrogen-peroxide water.
* If precipitates (insoluble matter) are produced, dissolve them totally by taking some means (e.g. alkali dissolution).
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 pre-conditioning method and a measurement method can guarantee that the lower determination limit of lead is less than 30 ppm, the combination is also applicable. Any one of the measurement methods (except AAS) enables you to analyze cadmium and lead simultaneously. Note: EN71-3:1994, an elution method, is not applicable. JIS K0102-54, a test for industrial sewage, specifies measurement methods only; therefore you must specify the pre-conditioning method that is actually applied.

Substances: Mercury and mercury compounds		
All metals, alloys, inorganic compounds, organic compounds, inorganic salts, organic salts, and other substances		
Targets		The date on or after which Sony won't accept the targets
Level 1	<ul style="list-style-type: none"> - Packaging materials (Refer to p. 12.) - Pigments, paints, and inks - Hour meters - Small-sized fluorescent lamps (e.g. those for the back lights of liquid crystal displays) whose mercury content (per lamp) is more than 10 mg - Straight-tube fluorescent lamps whose mercury content (per lamp) is more than 20 mg - The relays, switches, or sensors whose contacts contain mercury - Mercury or its compounds mixed in plastics - Coin cell batteries whose mercury content, in proportion to the total weight of each one, is 2% or more - The batteries (excluding coin cell ones) and battery packs whose mercury content, in proportion to the total weight of each one, is 0.0005% or more 	Sony has been declining to accept them.
Level 2	<ul style="list-style-type: none"> - All purposes except those classified at Level 1 or 3 - 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 	January 1, 2005
Level 3	<ul style="list-style-type: none"> - Lamps other than small-sized fluorescent ones and straight-tube 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 - Coin cell batteries whose mercury content, in proportion to the total weight of each one, is less than 2% - The batteries (excluding coin cell ones) and battery packs whose mercury content, in proportion to the total weight of each one, is less than 0.0005% 	

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		The date on or after which Sony won't accept the targets
Level 1	- Packaging materials (Refer to p. 12.)	Sony has been declining to accept them.
Level 2	- All purposes (e.g. those [1] used for tanning, [2] contained in inks and paints as components of their pigments, and [3] applied for preventing rust on surfaces of plating [on screws, steel plates, etc.]	January 1, 2005

Substance: Polychlorinated biphenyls (PCB)		
Targets		The date on or after which Sony won't accept the targets
Level 1	- All purposes (e.g. those for capacitors, lubricants, insulating oils, transformers containing oil, and flame retardants contained in plastics)	Sony has been declining to accept them.

Substances: Polychlorinated naphthalenes (PCN)		
Targets		The date on or after which Sony won't accept the targets
Level 1	- All purposes (e.g. those for lubricants and paints) The targets are PCN, which contain at least three chlorine substituents.	Sony has been declining to accept them.

Substances: Chlorinated paraffins (CP)		
Short-chain chlorinated paraffins with the following characteristics: C10-13, Cl = 50 wt% or more		
Targets		The date on or after which Sony won't accept the targets
Level 1	- The cabinets and PWBs of products (including accessories)	Sony has been declining to accept them.
Level 3	- All purposes except those classified at Level 1	

Substances: Other chlorinated organic compounds		
Targets		The date on or after which Sony won't accept the targets
Level 3	- The plasticizers or flame retardants contained in plastics, and the flame retardants used for PWBs	

Substances: Brominated organic compounds – Polybrominated biphenyls (PBB)		
Targets		The date on or after which Sony won't accept the targets
Level 1	- All purposes (e.g. those for the flame retardants contained in plastics)	Sony has been declining to accept them.

Substances: Brominated organic compounds – Polybrominated diphenylethers (PBDE)		
Targets		The date on or after which Sony won't accept the targets
Level 1	All purposes except those classified at Level 2 - All purposes (e.g. those for the flame retardants contained in plastics)	Sony has been declining to accept them.
Level 2	- The parts made by the dies that were made in December 2002 or earlier (Applicable only to the bodies of the displays and TV sets shipped to countries other than European ones) The parts whose molding dies have been made since January 2003 must not contain PBDE.	January 1, 2005

Substances: Other brominated organic compounds		
Targets		The date on or after which Sony won't accept the targets
Level 3	- The flame retardants contained in plastics, or used for PWBs	

Substances: Organic tin compounds (tributyl tin compounds, triphenyl tin compounds)		
Targets		The date on or after which Sony won't accept the targets
Level 1	- All purposes (e.g. those for paints, inks, preservatives, and fungicides)	Sony has been declining to accept them.

Substance: Asbestos		
Targets		The date on or after which Sony won't accept the targets
Level 1	- All purposes (e.g. those for insulators and fillers)	Sony has been declining to accept them.

Substances: Azo compounds		
Targets		The date on or after which Sony won't accept the targets
Level 1	<ul style="list-style-type: none"> - The azo compounds that may produce amines specified in Table 4. 2a when they are decomposed on the basis of a test method specified in German Law for Foods and Consumer Products - Pigments used for the parts of products contacting human skins continuously (e.g. belts, straps, ear phones, head phones, and shoulder pads for bags). Those products are originally designed on the assumption that they contact the skins. 	Sony has been declining to accept them.
Level 3	<ul style="list-style-type: none"> - Parts that do not contact human skins continuously (e.g. cushions, mice, remote controllers, and carrying bags). 	
<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"> 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"; 2) CEN ISO/TS 17234:2003, "Leather-Chemical tests–Determination of certain azocolorants in dyed leathers"; and 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." 		

Table 4. 2a List of the amines that must not be produced when azo compounds are decomposed

CAS No.	Amines
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-chloroaniline)
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		The date on or after which Sony won't accept the targets
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)	Sony has been declining to accept them.
Level 2	- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for destinations other than Europe (e.g. speakers, racks)	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/m³) in an air-tight test chamber whose volume is 12 m³, 1 m³, or 0.0225 m³</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 desicator 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"> - A chamber method specified in EN-717-1:2002 (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; EN120:1992) - A desicator method specified in JIS A 5905 (Fiberboards) and JIS A 5908 (Particleboards) 		

Substances: Polyvinyl chloride (PVC) and PVC blends		
Targets		The date on or after which Sony won't accept the targets
Level 2	<ul style="list-style-type: none"> - Sheets used as packaging materials (e.g. air cushions, blister packs, and Miramat [protective bags]) - The insulation plates, tubes, and caps used for the outside of devices - Connection cords, vinyl wires for internal wiring, and other units with cords - Power supply cords (except those for EU countries) 	January 1, 2005
Level 3	<ul style="list-style-type: none"> - Binders - The insulation plates, tubes, and caps employed in devices - Polyvinyl electrical wires for high voltage - Coating and insulating tapes for de-Gauss coils - Speaker grilles - Power-supply cords for import into EU countries (If no alternative technologies satisfying demands on product safety are available, they may be used continuously.) - Parts, which are not classified at Level 2 and which uses the blends made from vinyl chloride copolymers or polyvinyl chloride and from other polymers 	

4.2 Additional rules for packaging materials

Table 4.3 Additional rules for packaging materials

Substances: Heavy metals (mercury, cadmium, lead, and hexavalent chromium)		
Articles that satisfy not only the rules specified in Clause 4.1 (Table 4. 2), but also the following conditions determined by the regulations of relevant laws		
Targets		The date on or after which Sony won't accept the targets
Level 1	<p>- The articles used for product packages and packages for part transportation (e.g. handles, reels, bags, cushions, staples, sheets, wraps, paints, inks, tapes, labels, magazine sticks [including stoppers], corrugated cardboard, wooden frames, vinyl ties, cushioning materials, bulk cases, and foil or trays)</p> <p>* This rule does not apply to cartons for returnable boxes owned by part suppliers.</p>	Sony has been declining to accept them.
<p>Allowable concentrations</p> <p>- "Less than 100 ppm" is determined as the allowable total-concentration of four heavy metals (mercury, cadmium, hexavalent chromium, and lead) 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, wraps, reels, tapes, magazine sticks [including stoppers], polyvinyl bags, vinyl ties, bulk cases, and foil or trays)</p>		
<p>Standards for measurement</p> <p>1) Pre-conditioning</p> <p>For cadmium and lead, follow the methods respectively specified on p. 5 and 7.</p> <p>For mercury, typical test methods are as follows:</p> <p>(1) A pressurized acid decomposition method done in a sealed container (a microwave decomposition method: e.g. EPA 3052:1996);</p> <p>(2) A heating evaporation-cold-vapor mercury-atomic-absorption method (Full-automatic test equipment is marketed.); and</p> <p>(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.</p> <p>If precipitates (insoluble matter) are produced, dissolve them totally by taking some means (e.g. alkali dissolution).</p> <p>At first, analyze mercury, cadmium, lead, and total chromium to check whether the total concentration of the four elements is less than 100 ppm.</p> <p>If it is 100 ppm or more, analyze the hexavalent chromium contained in the total chromium.</p> <p>Then, check whether the total concentration of mercury, cadmium, lead, and hexavalent cadmium is less than 100 ppm.</p> <p>2) Measurement methods</p> <p>Regarding the measurement of cadmium, lead, and total-chromium concentrations, follow the methods specified on p. 5 and 7.</p> <p>Regarding the measurement of mercury concentrations, follow the methods on the above pages, too.</p> <p>When the mercury concentration is predicted to be low, you are advised to use either one of the following methods:</p> <p>(1) A reduction-evaporation atom-absorption method; and</p> <p>(2) An ICP-AES (OES) method with a hydride-generation apparatus.</p>		

[Standards for measuring hexavalent-chromium concentration]

1) Pre-conditioning

- An eluting method (Warm Water Sampling Process) under the formation of a complex by adding 1.5 diphenylcarbarazide

2) Measurement method

- Ultraviolet-Visible (UV/VIS) Spectroscopy

If a combination of a pre-conditioning method and a measurement method can guarantee the following lower detection limits, 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.

Any one of the measurement methods (except AAS) enables you to analyze concentrations of cadmium, lead, and the total chromium simultaneously.

ATTACHED DOCUMENTS

1. SUBSTANCES, AND LAWS AND REGULATIONS IN VARIOUS COUNTRIES

2. DETAILS OF THE SUBSTANCES IN QUESTION (TYPICAL EXAMPLES)

- Cadmium and cadmium compounds
- Lead and lead compounds
- Mercury and mercury compounds
- Hexavalent chromium compounds
- Polychlorinated biphenyls (PCB)
- Polychlorinated naphthalenes (PCN)
- Chlorinated paraffins (CP)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenylethers (PBDE)
- Organic tin compounds (Tributyl tin compounds and Triphenyl tin compounds)
- Asbestos
- Formaldehyde
- Polyvinyl chloride (PVC) and PVC blends

Disclaimer: This list is illustrative, and Sony Cooperation does not represent that it is exhaustive.

1. SUBSTANCES, AND LAWS AND REGULATIONS IN VARIOUS COUNTRIES

Note) The following are the contents confirmed as of September 2002. The contents of the laws and regulations may be changed, so that it is necessary to confirm the latest versions of relevant laws and regulations.

Substances	Laws and regulations
Cadmium and cadmium compounds	EU Directive
	Regulations in each EU countries
	(EU) RoHS Directive, etc.
	(EU) Battery Directive
Lead and lead compounds	(The U. S.) The Laws of the State of California (Proposition 65)
	(EU) RoHS Directive
	(EU) Battery Directive
Mercury and mercury compounds	Regulations in the Netherlands
	(EU) RoHS Directive
	Regulations in Denmark
	Regulations in Sweden
	China regulations on batteries
Hexavalent chromium compounds	EU Directive
	(EU) RoHS Directive
Polychlorinated biphenyls (PCB)	(Japan) Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances (Class 1), etc.
Polychlorinated naphthalenes (PCN)	(Japan) Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances (Class 1), etc.
Short-chain chlorinated paraffins (CP) (C10-13) (Cl = 50 wt% or more)	No laws and regulations regulate them. However, the Eco-label is used to distinguish the substances that contain short-chain chlorinated paraffins. (Blue angel marks, TC 095, etc. are also used for this purpose.)
Polybrominated biphenyls (PBB)	EU Directive
	(EU) RoHS Directive
Polybrominated diphenylethers (PBDE)	EU Directive
	(EU) RoHS Directive
Organic tin compounds (Tributyl tin compounds/ Triphenyl tin compounds)	(Japan) Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances (Class 1, 2), etc.
Asbestos	(Japan) Industrial Safety and Health Law, etc.
Formaldehyde	(Germany) Regulations on Formaldehyde, (Denmark) Regulations on Formalim, etc.
Azo compounds	EU Directive, 76/769/EEC
Heavy metals (lead, cadmium, mercury, and hexavalent chromium)	EU Directive on Packaging and Packaging Waste (94/62/EC), etc.
	(New York and other 16 states in the U.S.) Regulations on Heavy Metals in Packaging Materials

2. DETAILS OF SUBSTANCES (TYPICAL EXAMPLES)

• Cadmium and cadmium compounds

1. Examples: All substances containing cadmium or cadmium compounds

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 · 4H ₂ O	
Cadmium sulfate	10124-36-4	CdSO ₄	NiCd batteries, 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: All substances containing lead or lead compounds

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 ₂ O ₃	
Lead (II, IV) oxide	1314-41-6	Pb ₃ O 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) ₂ Pb(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 ₄ SO 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 ₃ COO) ₂ · 3H ₂ O	
Lead (II) acetate	301-04-2	Pb(CH ₃ COO) ₂	
Lead (IV) acetate	546-67-8	Pb(CH ₃ COO) ₄	

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; 22569-74-0	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	PbHAsO_4	
Lead (II) arsenite	10031-13-7	$\text{Pb}(\text{AsO}_2)_2$	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	$\text{Pb}(\text{CH}_3)_4$	
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: All substances containing mercury or mercury compounds

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 ₂ O	
Mercury (II) oxide	21908-53-2	HgO	Mercury cells, preservatives
Mercury (I) chloride	10112-91-1	Hg ₂ Cl 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	7783-35-9	Hg ₂ SO ₄	Batteries
Mercury (II) fulminate	628-86-4	Hg(ONC) ₂	
Mercury (II) acetate	1600-27-7	Hg(CH ₃ COO) ₂	
Methylmercury salts	e.g. 22967-92-6	CH ₃ HgX; X=Cl, Br, I, OH, etc.	Fungicides
Ethylmercury salts		C ₂ H ₅ HgX; X=Cl, Br, I, OH, etc.	Preservatives, disinfectants
Propylmercury salts		C ₃ H ₇ HgX; X=Cl, Br, I, OH, etc.	
Phenylmercury salts		C ₆ H ₅ HgX; X=Cl, Br, I, OH, etc.	Preservatives, disinfectants
Methoxyethylmercury salts		CH ₃ OC ₂ H ₄ HgX; X=Cl, Br, I, OH, etc.	Disinfectants, fungicides
Dialkylmercury		R ₂ Hg; R=alkyl group (C _n H _{2n+1})	
Diphenylmercury	587-85-9	(C ₆ H ₅) ₂ Hg	
Other mercury compounds			

• **Hexavalent chromium compounds**

1. Examples: Only the substances containing hexavalent chromium compounds

Thus, metallic chrome, chrome alloys, chrome plating, and trivalent-chromium compounds do not fall under this category.

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 ₂ CrO ₄	Corrosion prevention
Sodium chromate	7775-11-3	Na ₂ CrO ₄	Antirust, tanning
Potassium chromate	7789-00-6	K ₂ CrO ₄	Pigments, inks, and tanning
Potassium chlorochromate	16037-50-6	K[CrO ₃ Cl]	
Ammonium chromate	7788-98-9	(NH ₄) ₂ CrO 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 ₂ Cr ₂ O ₇	Pigments, photographs, tanning, and corrosion prevention
Potassium dichromate; potassium bichromate	7788-50-9	K ₂ Cr ₂ O ₇	Pigments, photographs, batteries, plating, and tanning
Ammonium dichromate; ammonium bichromate	7789-09-5	(NH ₄) ₂ Cr ₂ O ₇	Pigments, photographs, and catalysts
Calcium dichromate; calcium bichromate	14307-33-6	CaCr ₂ O ₇	Catalysts, corrosion prevention
Zinc dichromate; zinc bichromate		ZnCr ₂ O ₇	Pigments
Other hexavalent chromium compounds			

● **Polychlorinated biphenyls (PCB)**

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

● **Polychlorinated naphthalenes (PCN)**

1. Examples

Name	CAS No.	Chemical formula	Main purposes
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	$C_{10}Cl_8$	

● **Chlorinated paraffins (CP)**

1. Examples

Name	CAS No.	Chemical formula	Main purposes
Short-chain Chlorinated paraffins C10-13, Cl \geq 50 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; polybromodiphenyloxyde; polybrominated biphenyl ethers; PBDE; PBDO; PBBE		$C_{12}H_{10-x}Br_xO$ (x =1-10)	Flame retardants
Decabromodiphenyl ether; decabromodiphenyloxyde; DBDPE; DBDPO	1163-19-5	$C_{12}Br_{10}O$	Flame retardants (for PE, ABS, and polyester)
Octabromodiphenyl ether; octabromodiphenyloxyde	32536-52-0	$C_{12}H_2Br_8O$	Flame retardants (for ABS, HIPS, and LDPE)
Hexabromodiphenyl ether; hexabromodiphenyloxyde	36483-60-0	$C_{12}H_4Br_6O$	Flame retardants
Pentabromodiphenylehter; pentabromodiphenyloxyde	32534-81-9	$C_{12}H_6Br_5O$	Flame retardants

• **Organic tin compounds (Tributyl tin compounds and Triphenyl tin compounds)**

1. Examples: Only tributyl tin compounds and triphenyl tin compounds
Therefore, dibutyl or diphenyl compounds do not fall under this category. Metal tin, tin alloys, tin plating, and tin inorganic compounds do not fall under this category, either.
Examples are written in the table below.

Name	CAS No.	Chemical formula	Main purposes
Tributyl tin bromide	1461-23-0	$(C_4H_9)_3SnBr$	Disinfectants
Bis (tributyl tin) oxide	56-35-9	$C_{24}H_{54}OSn_2$	Disinfectants
Triphenyl tin	668-34-8	$(C_6H_5)_3Sn$	Disinfectants
Triphenyl tin bromide		$(C_6H_5)_3SnBr$	Disinfectants
Triphenyl tin chloride	639-58-7	$(C_6H_5)_3SnCl$	Disinfectants
Triphenyl tin hydroxide	76-87-9	$(C_6H_5)_3SnOH$	Disinfectants
Triphenyl tin N, N' -dimethyldithiocarbamate	1803-12-9	$(C_6H_5)_3Sn(CH_3)_2NCS_2$	
Triphenyl tin fluoride (fentin fluoride)	379-52-2	$(C_6H_5)_3SnF$	
Triphenyl tin acetate (fentin acetate)	900-95-8	$(C_6H_5)_3SnOCOCH_3$	
Triphenyl tin fatty acid salts	18380-71-7	No chemical formulas	
Triphenyl tin chloroacetate	7094-94-2	$(C_6H_5)_3SnOCOCH_2Cl$	
Tributyl tin methacrylate	2155-70-6	$(C_4H_9)_3SnC_4H_5O_2$	
Bis (tributyl tin) fumarate	6454-35-9	$C_2H_2(COO)_2([C_4H_9]_3Sn)_2$	
Tributyl tin fluoride	1983-10-4	$(C_4H_9)_3SnF$	
Bis (tributyl tin) 2, 3-dibromosuccinate	31732-71-5	$([C_4H_9]_3Sn)_2C_2H_2(BR)_2(COO)_2$	
Tributyl tin acetate	56-36-0	$(C_4H_9)_3SnOCOCH_3$	
Tributyl tin laurate	3090-36-6	$(C_4H_9)_3SnC_{12}H_{23}O_2$	

Name	CAS No.	Chemical formula	Main purposes
Bis (tributyl tin) phthalate	4782-29-0	$(C_6H_4)(COO)_2([C_4H_9]_3Sn)_2$	
Tributyl tin sulfamate	6517-25-5	$(C_4H_9)_3SnSO_3NH_2$	
Bis (tributyl tin) maleate	14275-57-1	$C_{28}H_{56}O_4Sn_2$	
Tributyl tin chloride	1461-22-9	$(C_4H_9)_3SnCl$	
Mixture of tributyl tin cyclopentanecarboxylate and its analogs (Tributyl tin naphthenate)	85409-17-2		
Mixture of tributyl tin 1, 2, 3, 4, 4a, 4b, 5, 6, 10, 10a-decahydro-7-isopropyl-1, 4a- dimethyl-1-phenanthrenecarboxylate, and their analogs (Tributyl tin rosin salts)	26239-64-5	$C_{32}H_{56}O_2Sn$	
Copolymer of alkyl acrylate, methyl Methacrylate and tributyl tin methacrylate (alkyl; C = 8)			

• 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)

Contents of this document may be changed without prior notice, as a result of a revision or modifications on SS-00259 (a Sony Technical Standard), "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

The 3rd edition of SS-00259 (excerpts)

Enforced 2004.02.01

Issued by Standard Solutions Global Head Office, Sony Corporation

部件和材料中的环境管理物质 管理规定
(SS-00259 第3版 拔萃版)

SONY

本技术标准**为 SS-00259 第三版（双语版）的中文译文。**
对于本文内容如有疑义，**请参照 SS-00259 第三版（双语版）。**

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1. 目的

本技术标准，通过明确索尼产品的部件或设备等中所含环境管理物质中的禁止使用物质、计划废除物质以及削减物质，来达到防止向索尼产品混入、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 产品的适用范围

- (1) 由索尼集团设计、制造、销售并且发布的索尼产品
- (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或发布的索尼产品
- (3) 第三者委托索尼集团进行设计、制造的产品
(但是，由该第三者指定的部件、材料除外)

2.2 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、半导体设备、印刷电路板、记录介质、包装材料、包装部件）
- 螺丝
- 附件（遥控器、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
- 服务部件（部分服务用元件按照另外的通知书执行）
- 部件的交货人发送和保护货物所使用的包装材料
(木框、托架、导轨、送料杆、袋、缓冲材料、固定器具、薄板、绳索、硬纸箱、胶带、捆绑带、标签、印刷油墨及涂料等)

此外，在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，必须按照其法令执行。

3. 术语的定义

本技术标准，对术语做如下定义。

(1) 环境管理物质

索尼判断在部件、设备等所含有的物质中，有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，不能在部件及材料中使用，到达期限时指定为“1 级”。

(c) 3 级

目前虽然没有规定日期以及削减目标，但指定了计划削减在部件、材料中含量的物质及其用途。

从被判断为可以确立代替零件、开发材料和代替技术的产品中努力积极采用。

(3) 含有

含有系指无论是否有意，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）。

(4) 杂质

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。

此外，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，也按“含有”处理。

但是，在制造半导体设备等使用的掺杂剂（**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，这中情况不作为“含有”处理。

此外，在本技术标准中，在指定允许浓度的情况下，当在部件、设备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 —

合成高分子生成的纤维、胶片、胶带、成形产品、合成橡胶产品、植物原料塑料、粘合剂等。

*天然树脂与上述合成高分子物质合成时按塑料处理。

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	多氯联苯 (PCB)
	多氯化萘 (PCN)
	氯代烷烃 (CP)
	其他有机氯化物
有机臭素系化合物	多溴联苯 (PBB)
	多溴二苯醚 (PBDE)
	其他有机溴化合物
有机锡化合物 (三丁基锡化合物、三苯基锡化合物)	
石棉	
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"> • 包装部件（参照 P.12） 【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】 • 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、遥控器键、捆绑带、电子部件的外装树脂、外框、标签、唱片等） • 涂料、墨水 • 表面处理（电镀等）、涂层 但是要求高可靠性的电接点电镀而没有代替材的除外 • 照片胶卷 • 日光灯（小型日光灯、直管日光灯） 	立即执行
	<ul style="list-style-type: none"> • 在镍、镉电池中作为新型部件而供货的材料。 但所有的镍、镉电池从 2007 年 1 月开始将禁止供货 	立即执行 (从 2003 年 4 月 1 日开始)
2 级	<p>3 级以外的所有用途。例如，</p> <ul style="list-style-type: none"> • 直流电动机、开关、继电器、断路器等电接点 • 温度保险丝的可溶体 • 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（镉含量为 20 ppm 以上的焊锡） • 荧光显示装置中含有的荧光体、CdS 光导电池块 • 电阻（玻璃料）等 <p>注）锌压铸件等金属部件中的镉，除了有意添加以外，将作为杂质不予理会。</p>	从 2005 年 1 月 1 日开始
3 级	<ul style="list-style-type: none"> • 要求使用可靠性高的电接点电镀而没有代替材料的产品 • 光学玻璃、滤光玻璃 	
允许浓度： 5 ppm 以下；【测定对象：塑料（包括橡胶）、涂料、墨水】		

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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、过氧化氢的酸分解法 (例如EPA3050B Rev.2:1996)
 4. 采用硫酸、硝酸或过氧化氢的湿式分解法 (例如BS EN1122: 2001)等
- * 在上述所有之中, 发生沉淀物 (不溶物) 时, 可采用任何方法 (碱溶融法等) 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. 感应等离子体发光分光分析装置 (ICP-AES, ICP-OES) ; 例如 EN ISO 11885: 1998
2. 原子吸光分析装置 (AAS) ; 例如 EN ISO 5961: 1995
3. 感应等离子体质量分析装置 (ICP-MS)
 - 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。

(注)

溶出法的EN71-3:1994为不适用。

工业排水试验法的 JIS K0102-55 仅为测定法, 因此必须一同记述预处理方法。

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"> • 包装材料（参照 P.12） • 用于印刷电路板而使用铅的涂料、颜料、墨水 • 除小型密封铅电池的电池和电池组，铅含有量达总重量的 0.4% 以上的产品 	立即执行										
	<ul style="list-style-type: none"> • 在小型密封铅电池中作为新型部件而供货的产品，但是所有的小型密封铅电池从 2005 年 1 月开始禁止供货 	立即执行 (从 2003 年 4 月 1 日开始)										
2 级	<ul style="list-style-type: none"> • 部件的外部电极、引导端子等的表面处理 (电气部件 / 半导体设备 / 散热片等) • AC 适配器、电源电缆、连接电缆、遥控器、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 • 机器外露部位中使用的涂料、墨水 	从 2004 年 4 月 1 日开始										
	3 级以外的所有用途。例如， <ul style="list-style-type: none"> • 零部件的外部电极、引导端子等的表面处理中 AC 适配器、遥控器、半导体设备等内装的零部件 • 铅在 85 wt% 以下的有铅焊锡中，所含有的铅的含量在 1000 ppm 以上的产品。 • 含有允许浓度*1 以上的各种合金（包括焊锡材料） • AC 适配器、电源电缆、连接电缆、遥控器、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 • 机器外露部位以外使用的涂料、墨水 	从 2005 年 1 月 1 日开始										
3 级	<ul style="list-style-type: none"> • 部件、设备的连接用高熔点焊锡（铅为 85 wt% 以上的有铅焊锡） • 电子陶瓷部件【压电元件，陶瓷感应材料、磁性材料(铁氧体)】 • 光学玻璃、滤光玻璃 • 使用于无电解电镀、镀金时的稳定剂、添加剂的铅 • 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，包括电阻体、导电糊剂(银糊剂、铜糊剂)、粘结剂、玻璃料、密封材等。 • C4 (Controlled Collapse Chip Connection) 补片下的焊锡糊剂 • 除小型密封铅电池的电池和电池组，含铅量达总重量 0.4% 以下的。但是，关于塑料（包括橡胶）、涂料、墨水中的铅和有铅焊锡属于 1 级和 2 级的按照规定处理。 • 含有的如下合金 (*1) <table border="0" style="margin-left: 20px;"> <tr> <td style="padding-right: 20px;">合金的种类</td> <td>含铅允许浓度</td> </tr> <tr> <td>钢材</td> <td>0.35 wt% 以下</td> </tr> <tr> <td>铝合金</td> <td>0.4 wt% 以下</td> </tr> <tr> <td>铜合金(也包括铸铜、磷青铜)</td> <td>4 wt% 以下</td> </tr> <tr> <td>焊锡</td> <td>1000 ppm 以下</td> </tr> </table> 	合金的种类	含铅允许浓度	钢材	0.35 wt% 以下	铝合金	0.4 wt% 以下	铜合金(也包括铸铜、磷青铜)	4 wt% 以下	焊锡	1000 ppm 以下	
合金的种类	含铅允许浓度											
钢材	0.35 wt% 以下											
铝合金	0.4 wt% 以下											
铜合金(也包括铸铜、磷青铜)	4 wt% 以下											
焊锡	1000 ppm 以下											
允许浓度： 100 ppm 以下；【测定对象：塑料（包括橡胶）、涂料、墨水】												

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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、过氧化氢的酸分解法(例如EPA3050B Rev.2:1996)
 - 4.采用硫酸、硝酸或过氧化氢的湿式分解法等。
- * 在上述所有之中,发生沉淀物(不溶物)时,可采用任何方法(碱熔融法等)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.感应等离子体发光分光分析装置(ICP-AES,ICP-OES);例如 EN ISO 11885: 1998
- 2.原子吸光分析装置(AAS);例如EN ISO 5961 : 1995
- 3.感应等离子体质量分析装置(ICP-MS)

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。

(注)

溶出法的EN71-3:1994为不适用。

工业排水试验法的JIS K0102-54 仅为测定法,因此必须一同记述预处理方法。

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"> • 包装材料(参照 P.12) • 颜料、涂料、墨水 • 计时器 • 小型日光灯(液晶背光等): 每一支的含量超过 10 mg 的。 • 直管日光灯:每一支的含量超过 20 mg 的。 • 使用汞作为接点的继电器、开关、传感器 • 塑料中的添加剂 • 钮扣电池,该汞含量达电池总重量 2% 以上的 • 钮扣电池以外的电池和电池组,该汞含量达电池总重量 0.0005% 以上的 	立即执行
2 级	<ul style="list-style-type: none"> • 小型日光灯:每一支的含量为 5 mg 以上的。 • 直管日光灯:每一支的含量为 5 mg 以上的。 • 1 级和 3 级以外的所有用途 	从 2005 年 1 月 1 日开始
3 级	<ul style="list-style-type: none"> • 小型日光灯,直管荧光灯以外的灯(高压汞灯等) • 小型日光灯:每一支的含量为 5 mg 以下的。 • 直管日光灯:每一支的含量为 5 mg 以下的。 • 钮扣电池,该汞含量达电池总重量 2% 以下的。 • 钮扣电池以外的电池和电池组,该汞含量达电池总重量 0.0005% 以下的 	

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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.12）	立即执行
2 级	• 电镀防锈处理（螺丝、钢板等）、含有作为墨水 / 涂料的颜料等成分的产品、皮产品的鞣革剂等所有的用途	从 2005 年 1 月 1 日开始

物质名称：多氯联苯（PCB）		
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：多氯化萘（PCN）		
对象		禁止供货时期
1 级	• 润滑油、涂料等所有用途 将氯原子数为 3 以上的产品作为对象	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 50wt% 以上的短链型氯代烷烃”为对象。		
对象		禁止供货时期
1 级	• 用作含有附件产品的外框（外壳）、印刷电路板。	立即执行
3 级	• 1 级以外的所有用途。	

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：有机溴化合物 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：有机溴化合物 多溴二苯醚（PBDE）		
对象		禁止供货时期
1 级	用于 2 级以外的所有用途。 • 塑料的阻燃剂等所有用途	立即执行
2 级	• 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	从 2005 年 1 月 1 日开始

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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：有机锡化合物（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：偶氮化合物		
对象		禁止供货时期
1级	• 按照德国日用品规则的试验法将偶氮化合物进行分解，有可能产生表 4.2a 中的胺，适用于与人体持续接触产品的人体接触部分（耳机、微型耳机、肩包的肩垫、皮带、绳索等）的颜料。	立即执行
3级	• 用于不与人体持续接触的部位（遥控器、胶垫、载运框、鼠标等）	
<p>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 azocolourants - Part 1: Detection of the use of certain azocolorants accessible without extraction“ CEN ISO/TS 17234:2003 „Leather-Chemical tests – Determination of certain azocolorants in dyed leathers“ 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”。</p>		

表 4.2a 偶氮化合物分解而不得产生的胺一览

CAS No.	胺
92-67-1	4-氨基苯基苯
92-87-5	对二氨基联苯
95-69-2	四氯甲苯胺
91-59-8	2-萘胺
97-56-3	邻氨基偶氮甲苯
99-55-8	二氨基四硝基甲苯
106-47-8	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

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120-71-8	氨基对甲苯甲醚
101-14-4	4,4'-亚甲基-双(二氯苯胺)
101-80-4	4,4'-氧代苯胺
139-65-1	4,4'-硫双苯胺
95-53-4	邻甲苯胺
95-80-7	2,4-甲代苯二胺
137-17-7	2,4,5-均三甲苯胺
90-04-0	邻氨基苯甲醚
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	<ul style="list-style-type: none"> • 出口欧洲产品中的纤维板、木屑板以及胶合板的木工产品（扬声器、机架等） 	立即执行
2 级	<ul style="list-style-type: none"> • 非出口欧洲产品中的纤维板、木屑板以及胶合板的木工产品（扬声器、机架等） 	从 2005 年 1 月 1 日开始
标准值（排放浓度）：采用下列方法中的任何方法 1) 气密试验室法 空气中浓度 12m ³ ，用 1m ³ 或 0.0225m ³ 的气密试验槽为 0.1 ppm 以下 (0.124mg/m ³ 以下) 2) 穿孔器法 <ul style="list-style-type: none"> • 未经表面处理的木屑板 100g 平均 6.5 mg 以下（6 个月的平均值） • 未经表面处理的纤维板 100g 平均 7.0 mg 以下（6 个月的平均值） 或 未经表面处理的木屑板、纤维板 100g 平均 8.0mg 以下（按照 EN120 的 1 次测定值） 3) 干燥器法 平均 0.5mg/l 以下、最大 0.7mg/l 以下（用 N=2 确认平均值、最大值）		
测定法：气密试验室法 EN 717-1:2002 (Wood based panels; determination of formaldehyde release; formaldehyde emission by the chamber method) 穿孔器法 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
2 级	<ul style="list-style-type: none"> • 用于包装材料的包装垫材（气泡布、气泡膜、反射垫（保护袋）等） • 机器外部使用的绝缘板、绝缘管、绝缘盖 • 有连接电缆、机内连用聚氯乙烯电线等的电缆类的装置 • 电源电缆（出口 EU 除外） 	从 2005 年 1 月 1 日开始
3 级	<ul style="list-style-type: none"> • 粘合剂 • 机器内部使用的绝缘板、绝缘管、绝缘盖 • 高压塑料电线 • 退磁线圈的包覆、绝缘胶带 • 扬声器托架 • 出口 EU 电源电缆（在没有满足产品安全要求的代替技术时继续使用） • 为 2 级以外的对象，使用氯乙烯共聚以及聚氯乙烯与其他聚合物的共混物的部件 	

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4.2 有关包装材料的追加事项

表 4.3 有关包装材料的追加事项

物质名称：重金属 (汞、镉、六价铬、铅)		
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	<ul style="list-style-type: none"> • 产品包装纸盒、产品箱、用于搬运部件包装上的产品 【把手、木框、箔以及托架、导轨、送料杆（包括止动器）、袋、缓冲材料、固定器具、薄板、绳索、硬纸箱、涂料、墨水、胶带、捆绑带、标签、胶垫、散装盒等】 * 零部件交货人所有的搬运箱属于对象外 	立即执行
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。 【主要塑料部位：把手、塑料袋、胶垫、绳索、箔以及托架、导轨、胶带、送料杆（包括止动器）、散装盒、捆绑带等】		

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测定标准:

(1) 预处理

预处理方法,

镉、铅以 (P.5) (P.7) 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 (全自动装置在市场有出售)
3. 采用回流冷却器分解烧瓶 (凯尔达鲁法), 用硫酸、硝酸的湿式分解法等。
在产生沉淀物时采用某种方法进行溶解。

作为总铬量进行分析, 4 种元素合计为 100 ppm 以下。但是, 4 种元素合计为 100 ppm 以上时, 将分析总铬量中的六价铬, 确认汞、镉、六价铬、铅的合计是否为 100 ppm 以下。

(2) 测定装置

对于镉、总铬、铅, 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, 但是如果估计为低浓度混入时, 采用还原汽化原子吸光法或带有氢气发生装置的 ICP-AES、ICP-OES 分析为其标准。

六价铬

测定标准:

(1) 预处理

1. 溶出法 (温水抽取法)

(2) 测定方法

1. 紫外-可见光吸光光度法

- 通过预处理和测定装置的组合, 如果可以保证定量下限各自为汞 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, 镉、铅、总铬量使用以上 AAS 以外的方法也可以同时进行分析。

附加文档

1. 世界各国和地区就物质使用实施的法律法规
2. 所属物质的详细信息(典型实例)
 - 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)
 - 氯代烷烃 (CP)
 - 多溴联苯 (PBB)
 - 多溴二苯醚 (PBDE)
 - 有机锡化合物
 - 石棉
 - 甲醛
 - 聚氯乙烯 (PVC) 以及聚氯乙烯混合物

注意事项：此表为一个例子，索尼不保证是否已汇总全部内容。

1. 世界各国和地区就物质使用实施的法律法规

注) 这是记载的至 2002 年 9 月所确认的内容。由于法律规定的内容会有变动, 详细确认请参照各国法律规定的最新版。

物质名称	法律法规
镉以及镉化合物	欧盟规程建议
	欧盟各国管制规定
	欧盟欧洲危险物质使用限制规程建议等
	欧盟电池规程建议
铅以及铅化合物	美国加利福尼亚州法 (第 65 号提案)
	欧盟欧洲危险物质使用限制规程建议等
	欧盟电池规程建议
汞以及汞化合物	荷兰管制规定
	欧盟欧洲危险物质使用限制规程建议等
	丹麦管制规定
	瑞典管制规定
	中国电池管制规定
六价铬化合物	欧盟规程建议
	欧盟欧洲危险物质使用限制规程建议
多氯联苯 (PCB)	日本化学物质审查法第 1 种等特定化学物质
多氯化萘 (PCN)	日本化学物质审查法第 1 种等特定化学物质
短链型氯代烷烃 (CP) 碳链长度 10-13 氯的含量 50 wt% 以上	虽然没有在任何法律法规中加以规定, 但在环保标签中有规定 (蓝色天使 / TC095 等)
多溴联苯 (PBB)	欧盟规程建议
	欧盟欧洲危险物质使用限制规程建议
多溴二苯醚 (PBDE)	欧盟规程建议
	欧盟欧洲危险物质使用限制规程建议
有机锡 (三丁基锡化合物 / 三苯基锡化合物)	日本有关化学物质 (1 级 / 2 级) 等的检验和制造规定等法律
石棉	日本劳动安全卫生法等
甲醛	德国甲醛管制规定、丹麦福尔马林管制规定等
偶氮化合物	欧盟规程建议、76/769/EEC
重金属 (铅、镉、汞、六价铬)	欧盟有关包装以及包装废弃物的命令 (94/62/EC) 等
	美国纽约州与其他 16 州包装材重金属规定

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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

所属物质是指包含镉元素的全部物质。

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 · 4H ₂ O	
硫酸镉	Cadmium sulfate	10124-36-4	CdSO ₄	镉电池、电镀光泽剂、试剂
硬脂酸镉; 镉肥皂	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			

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● 铅以及铅化合物

1. 所属物质的例子

所属物质是指包含铅元素的全部物质。

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	焊接、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 ₂	铅酸电池、橡胶固化 剂、颜料的原料
三氧化二铅；三氧化铅	Dilead trioxide	-	Pb ₂ O ₃	
四氧化三铅；四三氧化铅； 铅丹；光明丹	Lead (II,IV) oxide	1314-41-6	Pb ₃ O ₄	颜料、铅酸电池、 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 ₄ SO 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, tryhydrate	6080-56-4	Pb(CH ₃ COO) ₂ · 3H ₂ O	
醋酸亚铅；醋酸铅(II价)；铅糖	Lead(II) acetate	301-04-2	Pb(CH ₃ COO) ₂	
醋酸二铅；醋酸铅(IV价)	Lead(IV) acetate	546-67-8	Pb(CH ₃ COO) ₄	

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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
油酸盐铅	Lead oleate	1120-46-3	$\text{Pb}[\text{CH}_3(\text{CH}_2)_7\text{CH}=\text{C}$ H $(\text{CH}_2)_7\text{COO}]_2$	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	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	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	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	$\text{Pb}(\text{CH}_3)_4$	
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			

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●汞以及汞化合物

1. 所属物质的例子

所属物质是指包含汞元素的全部物质。

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；氧化汞(I价)	Mercury(I)oxide	15829-53-5	Hg ₂ 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 ₂ Cl 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		Hg ₂ SO 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 ₃ COO) ₂	
甲基汞盐	Methylmercury salts	e.g. 22967-92-6	CH ₃ HgX ; X=Cl,Br,I,OH, etc.	防霉剂
乙烷基汞盐	Ethylmercury salts		C ₂ H ₅ HgX ; X=Cl,Br,I,OH, etc.	防腐剂、杀菌剂
丙基汞盐	Propylmercury salts		C ₃ H ₇ HgX ; X=Cl,Br,I,OH, etc.	
苯基汞盐	Phenylmercury salts		C ₆ H ₅ HgX ; X=Cl,Br,I,OH, etc.	防腐剂、杀菌剂
甲基氧乙烷基汞盐	Methoxyethylmercury salts		CH ₃ OC ₂ H ₄ HgX ; X=Cl,Br,I,OH, etc.	杀菌剂、防霉剂
二烷基组汞	Dialkylmercury		R ₂ Hg ; R=alkyl group (C _n H _{2n+1})	
二苯基汞	Diphenylmercury	587-85-9	(C ₆ H ₅) ₂ Hg	
其他汞化合物	Other mercury compounds			

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●六价铬化合物

1. 所属物质的例子

所属物质只有六价铬。

因此，金属铬、铬合金、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 ₃	颜料、催化剂、 电镀、鞣皮
铬酸锂	Lithium chromate	14307-35-8	Li ₂ CrO ₄	防腐剂
铬酸钠	Sodium chromate	7775-11-3	Na ₂ CrO ₄	防锈、鞣皮
铬酸钾	Potassium chromate	7789-00-6	K ₂ CrO ₄	颜料、墨水、 鞣皮
氯铬酸钾；三氧代氯酸钾	Potassium chlorochromate	16037-50-6	K[CrO ₃ Cl]	
铬酸铵	Ammonium chromate	7788-98-9	(NH ₄) ₂ CrO 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 ₂ Cr ₂ O ₇	颜料、防腐、相片、鞣 皮
重铬酸钾	Potassium dichromate; potassium bichromate	7778-50-9	K ₂ Cr ₂ O ₇	颜料、相片、电镀、电 池、鞣皮
重铬酸铵	Ammonium dichromate; ammonium bichromate	7789-09-5	(NH ₄) ₂ Cr ₂ O ₇	颜料、相片、催化剂
重铬酸钙	Calcium dichromate; calcium bichromate	14307-33-6	CaCr ₂ O ₇	防腐、催化剂
重铬酸锌	Zinc dichromate; zinc bichromate		ZnCr ₂ O ₇	颜料
其他六价铬化合物	Other hexavalent chromium compounds			

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●多氯联苯 (PCB)

1. 所属物质

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; 聚氯联苯	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

●多氯化萘 (PCN)

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
聚氯化萘; 氯萘	Polychlorinated naphthalene		$C_{10}H_{8-x}Cl_x$ ($x \geq 3$)	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	$C_{10}Cl_8$	

●氯代烷烃 (CP)

1. 所属物质

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50 wt%以上	Short-chain Chlorinated paraffin C10-13, Cl \geq 50 wt%	e.g. 85535-84-8	—	增塑剂、阻燃剂

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●多溴联苯 (PBB)

1. 所属物质

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
多溴化联苯; 聚溴二联苯; PBB	Polybrominated biphenyls; PBB	e.g. 67774-32-7	$C_{12}H_{10-x}Br_x$ ($x=1-10$)	阻燃剂

●多溴二苯醚 (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 ether; polybromodiphenyloxi- de; polybrominated biphenyl ethers; PBDE; PBDO; PBDE		$C_{12}H_{10-x}Br_xO$ ($x=1-10$)	阻燃剂
十溴二苯醚; 十溴二苯基氧化物; DBDPE; DBDPO	Decabromodiphenyl ether; decabromodiphenyloxi- de; 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	Octabromodiphenyl ether; octabromodiphenyloxi- de	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; hexabromodiphenyloxi- de	36483-60-0	$C_{12}H_4Br_6O$	阻燃剂
五溴二苯醚; 五溴二苯基氧化物	Pentabromodiphenylether ; pentabromodiphenyloxi- de	32534-81-9	$C_{12}H_5Br_5O$	阻燃剂

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●有机锡化合物（三丁基锡化合物、三苯基化合物）

1. 所属物质的例子

仅三丁基、三苯基化合物符合、二丁基、二苯基等化合物不属于此类。

因此，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
溴化三丁基锡	Tributyl tin bromide	1461-23-0	$(C_4H_9)_3SnBr$	杀菌剂
双三丁基锡氧化物	Tributyl tin oxide bis(tributyl tin)oxide	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
溴化三苯基锡	Triphenyl tin bromide		$(C_6H_5)_3SnBr$	杀菌剂
氯化三苯基锡	Triphenyl tin chloride	639-58-7	$(C_6H_5)_3SnCl$	杀菌剂
羟基三苯基锡	Triphenyl tin hydroxide	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 (二甲基二硫代氨基甲酸三苯基锡)	Triphenyl tin N,N'- dimethyldithiocarbamate	1803-12-9	$(C_6H_5)_3Sn(CH_3)_2$ NCS_2	
三苯基锡氟化物 (氟化三苯基锡)	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)	Triphenyl tin acetate (fentin acetate)	900-95-8	$(C_6H_5)_3SnOCOCH_3$	
三苯基锡脂肪酸盐	Triphenyl tin fatty acid salts	18380-71-7	无	
三苯基锡氯代乙酸盐	Triphenyl tin chloroacetate	7094-94-2	$(C_6H_5)_3SnOCOCH_2Cl$	
三丁基锡甲基甲基丙烯酸盐	Tributyl tin methacrylate	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	$C_2H_2(COO)_2$ $([C_4H_9]_3Sn)_2$	
三丁基锡氟化物	Tributyl tin fluoride	1983-10-4	$(C_4H_9)_3SnF$	
双(三丁基锡)2,3-二溴丁二酸盐	Bis(tributyl tin)2,3- dibromosuccinate	31732-71-5	$([C_4H_9]_3Sn)_2C_2H_2$ $(BR)_2(COO)_2$	
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	Tributyl tin laurate	3090-36-6	$(C_4H_9)_3SnC_{12}H_{23}O_2$	

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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
双(三丁基锡)苯二甲酸盐	Bis(tributyl tin)phthalate	4782-29-0	$(C_6H_4)(COO)_2$ $([C_4H_9]_3Sn)_2$	
三丁基锡磺酸盐	Tributyl tin sulfamate	6517-25-5	$(C_4H_9)_3SnSO_3NH_2$	
双(三丁基锡)马来酸盐	Bis(tributyl tin) maleate	14275-57-1	$C_{28}H_{56}O_4Sn_2$	
三丁基锡氯化物	Tributyl tin chloride	1461-22-9	$(C_4H_9)_3SnCl$	
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)	Mixture of tributyltin cyclopentanecarboxylate and its analogs (Tributyl tin 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)	Mixture of tributyl tin 1,2,3,4,4a,4b,5,6,10,10a-decahydro-7-isopropyl-1,4a-dimethyl-1-phenanthrenecarboxylate and its analogs (Tributyl tin rosin salt)	26239-64-5	$C_{32}H_{56}O_2Sn$	
烷基丙烯酸盐、甲基丙烯酸甲酯和甲基丙烯酸三丁基锡的共聚物(烷基丙烯酸盐的碳原子数限定为8个)	Copolymer of alkyl acrylate, methyl methacrylate and tributyl tin methacrylate(alkyl; C=8)			

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●石棉

1. 所属物质

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

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; polivinylchloride and polivinylchloride blends	e.g. 9002-86-2		氯乙烯树脂

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(注意事项)

由于索尼技术标准 **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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