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

部品・材料における環境管理物質 管理規定

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**SS-00259**

**ELEVENTH EDITION**

ESTABLISHED	2002-03-29
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## Security Grade: Class C

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SECURITY GRADE
CLASS C

# SONY TECHNICAL STANDARDS

SS-00259-00

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

PART 0: GENERAL RULES

ELEVENTH EDITION

ESTABLISHED	2002-03-29
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**SONY**

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## 1. POSITION OF THIS STANDARD

The purpose of regulating and issuing this Standard is to satisfy the following conditions by conforming to the rules specified in "Rules for Non-Use of Controlled Environmental Substances in Products":

- 1) To clarify "The Environment-related Substances to be Controlled which are Contained in Parts and Materials (i.e. 'Environment-related Substances to be Controlled' or 'The Controlled Substances')" defined in the Standards; and
- 2) To thoroughly notify the above-mentioned matter to the whole of Sony and to its suppliers.

## 2. OPERATIONAL PROCEDURE

- 1) Deliberations and decisions on matters regarding this Standard shall be made by the "Green Parts and Materials Engineering Committee" composed of the representatives of both the divisions in charge of each product and each division. The Deputy Chairman of the Sony Engineering Standardization Committee shall authorize the matters thus deliberated and decided.
- 2) When this Standard requires revising or abolishing, apply to the "Green Parts and Materials Engineering Committee" for the revisions or abolishment. The Committee shall deliberate the applied contents and decide the revisions or abolishment.

## 3. BASIC POLICY

The "Target" (a combination of a substance and its purposes [or parts]) classified at Level 1 in each table must not be used for Sony products at all.

- 1) With regard to the quantitatively-measurable substances, their standard values must be set in light of (a) both the detection limits and the uncertainty of measurement equipment, and (b) the inclusion of natural impurities.  
In this case, measurement methods and judgment standards shall be decided separately as detailed regulations for operation.
- 2) With regard to the substances for which the quantitative measurement is difficult and the limit values cannot be set, the fact that the substances are not used must be proved by the exchange of necessary documents or by other means.



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## **EXPLANATORY NOTES**

解 説

# **SS-00259**

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

部品・材料における環境管理物質 管理規定

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## **EXPLANATORY NOTES**

### **SS-00259**

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

In the past year since the issue of the SS-00259 10th edition, laws and regulations pertaining to the practice of environmentally sound production have been changed worldwide. This edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 10th edition.

### **Part 1**

#### **1. TERMS AND DEFINITIONS**

##### **1.1 Contained**

- "Contained" has been more clearly defined as follows:  
"Contained" means that a substance remains in parts, devices, or their materials because of addition, filling, blending, or adhesion, whether intended 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.'"

##### **1.2 Intentionally added**

- "Intentionally added" has been more clearly defined as follows:  
"Intentionally added" means a situation where a substance is contained in the part, device, or its materials because of deliberate addition, filling, blending, or adhesion, in order to provide a specific characteristic, appearance, property, attribute or quality."

##### **1.3 Target**

- "Target" has been newly defined as follows:  
"Target" is an object or element (e.g. parts, materials, applications or processing) that might trigger further obligations depending on the defined 'management level.'"

##### **1.4 Criteria/threshold level**

- "Criteria/threshold level" has been newly defined as follows:  
"Criteria/threshold level" is a condition or a numerical value. The use of a controlled substance is prohibited (level 1) or will be prohibited in the future (level 2 & 3) if
  - a) that controlled substance fulfills the condition or
  - b) the concentration of the controlled substance exceeds the specified numerical value"

#### **2. Environment-related Substances to be Controlled ('Controlled Substances')**

##### **2.1 Table 4.1 List of "Environment-related Substances to be Controlled ('Controlled Substances')"**

- The following substances have been newly added:  
"1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich"  
"1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters",  
Bis(2-methoxyethyl) phthalate  
4-(1,1,3,3-tetramethylbutyl) phenol  
Bis(2-methoxyethyl) ether  
N,N-dimethylacetamide (DMAC)

##### **2.2 Addition of criteria/threshold levels to Level 3 substances**

- As for substances classified as Level 3, specific criteria/threshold levels have been added to clarify the scope of required management (technical investigations and monitoring of substances and their applications).



### 2.3 Cadmium and cadmium compounds

- Criteria/threshold level for "plastics (including rubbers), paints, and inks" has been changed from "5 ppm or more of the cadmium" to "more than 100 ppm of the cadmium" in consideration of EU RoHS Directive, EU REACH Regulation, Denmark's Statutory Order, etc.

### 2.4 Lead and lead compounds

- Criteria/threshold level for "plastics (including rubbers), paints, and inks" has been changed from "100 ppm or more of the lead" to "more than 100 ppm of the lead" in homogeneous materials in consideration of Denmark's regulation etc.

Lead and lead compounds used for "Dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher" with "more than 1000 ppm of the lead in homogeneous materials", which were classified as Level 2, have been reclassified as Level 1.

The following item, which was Exemption, has been deleted.

"Crystal glass as defined in Annex 1 (Categories 1, 2, 3 and 4) of EU Directive 69/493/EEC"

### 2.5 Polyvinyl chloride (PVC) and PVC blends

- Criteria/threshold level for Level 3 has been set to "more than 1000 ppm (or 0.1 wt%) of the parts."

### 2.6 Other chlorinated organic compounds

- Criteria/threshold level for "other chlorinated organic compounds" in flame retardants used for printed wiring board laminate has been set to "More than 900 ppm (0.09%) chlorine content by weight in the laminate."
- Criteria/threshold level for "other chlorinated organic compounds" as flame retardants or plasticizers contained in plastic parts other than the above has been set to "Intentionally added."

### 2.7 Other brominated organic compounds

- Criteria/threshold level for "other brominated organic compounds" as flame retardants used for printed wiring board laminate has been set to "More than 900 ppm (0.09%) bromine content by weight in the laminate."
- Criteria/threshold level for "other brominated organic compounds" as flame retardants or plasticizers contained in plastic parts other than the above has been set to "intentionally added."

### 2.8 Dibutyltin (DBT) compounds

- Some misleading descriptions in Japanese version and in Chinese version have been more specifically explained or modified.
- Applications other than Level 2 such as sealants that are to be banned on the delivery on July 1, 2014 and after, which were classified as Level 2, have been reclassified as Level 1.

### 2.9 Dioctyltin (DOT) compounds

- "Additives of textiles," which were Level 2, have been reclassified as Level 1.

### 2.10 Beryllium copper

- Criteria/threshold level for Level 3 has been set to "intentionally added."

### 2.11 "1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich", "1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters", "Bis(2-methoxyethyl) phthalate"

- "1,2-benzenedicarboxylic acid", "di-C6-8-branched alkyl esters", "C7-rich", "1,2-benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters", and "bis (2-methoxyethyl) phthalate" have been newly listed in Level 3, whose criteria/threshold levels have been set to "more than 1000 ppm (or 0.1 wt%) of the parts."

### 2.12 4-(1,1,3,3-tetramethylbutyl) phenol

- "4-(1,1,3,3-tetramethylbutyl) phenol" has been newly listed in Level 3, whose criteria/threshold level has been set to "more than 1000 ppm (or 0.1 wt%) of the parts."

### 2.13 Bis(2-methoxyethyl) ether

- "Bis (2-methoxyethyl) ether" has been newly listed in Level 3, whose criteria/threshold level has been set to "more than 1000 ppm (or 0.1 wt%) of the parts."

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#### **2.14 N,N-dimethylacetamide (DMAC)**

- "N,N-dimethylacetamide (DMAC)" has been newly listed in Level 3, whose criteria/threshold level has been set to "more than 1000 ppm (or 0.1 wt%) of the parts."

### **3. Additional rules for packaging components and materials**

- Illustrative examples of PACKAGING components/materials and NOT PACKAGING components/materials have been revised.

### **4. Additional rules for batteries**

- Specific requirements for "'Batteries' or 'Battery packs' built into an instrument fixed" have been deleted as the underlying Swiss Ordinance has been aligned with EU battery directive.
- Based on Chinese regulation, "alkaline batteries (except button cells) whose lead content in proportion to their weight is 0.004% or more" have been banned.
- Based on Korean law, "nickel metal hydrogen (NiMH) rechargeable batteries whose mercury content in proportion to their weight is 0.0001% or more" have been banned.



## **EXPLANATORY NOTES**

### **SS-00259**

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

In the past year since the issue of the SS-00259 9th edition, laws and regulations pertaining to the practice of environmentally sound production have been changed worldwide. This edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 9th edition.

### **Part 1**

#### **1. TERMS AND DEFINITIONS**

##### **1.1 Management Standard Level 3**

- For clarification, the definition of Management Standard Level 3 has been changed from "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." to "Considering possibility of phase-out in the future (i.e. reclassification into Level 2), technical investigations on substances and their applications are conducted."

##### **1.2 Management Standard Exemption**

- For clarification, the definition of Management Standard Exemption has been changed from "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." to "Not subject to level 1, level 2 and level 3 because of reasons also being reflected by exemptions from laws. Technical investigations and monitoring of substances and their applications are conducted as necessary."

##### **1.3 Contained**

- The definition of Contained has been changed as follows.  
""Contained" means that a substance remains in parts, devices, or their materials because of addition, filling, blend, or adhesion, whether intended 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."

##### **1.4 Intentionally added**

- Intentionally added has been newly defined as follows.  
""Intentionally added" means a situation where a substance is contained in the part, device, or its materials because of intentional addition, filling, blend, or adhesion, in order to provide a specific characteristic, appearance, or quality."

##### **1.5 Impurity**

- The definition of Impurity has been changed as follows.  
"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 adequate technical means (i.e. natural impurities); and  
b) One generated in a synthesis process, which cannot be completely removed by adequate 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 "Intentionally added."

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## **2. ENVIRONEMNT-RELATED SUBSTANCES TO BE CONTROLLED**

### **2.1 Table 4.1 List of Controlled Substances**

- The following substances have been newly added:
  - Tris (2-chloroethyl) phosphate (TCEP)
  - Hexabromocyclododecane (HBCDD)
  - Diisobutyl phthalate
  - Arsenic trioxide, arsenic pentoxide
  - Boric acid, specific sodium borates

### **2.2 Changes in Table 4.2 Main "Targets" and "Effective date of the ban on the delivery" regarding 'Controlled Substances'**

- As for substances listed on Level 1 or 2, specific criteria/threshold levels have been added.
- Targets are described more precisely and the main applications and history of revisions have been described in the APPENDIXES.
- The order of listing of the Controlled Substances has been revised.

### **2.3 Cadmium and cadmium compounds**

- Optical glasses which were classified as Level 2 have been changed to Level 1, considering updates of EU laws and regulations.

### **2.4 Lead and lead compounds**

- The following substances which were classified as Level 2 have been changed to Level 1, considering updates of EU laws and regulations.
  - More than 2000 ppm (or 0.2 wt%) of the lead in glass of fluorescent tubes
  - Solders 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%

### **2.5 Mercury and mercury compounds**

- The following substances which were classified as Level 2 have been changed to Level 1.
  - Cold Cathode Fluorescent Lamp (CCFL) and External Electrode Fluorescent Lamp (EEFL);
  - Not over 500 mm in length; 3.5 mg or more and less than 5 mg of mercury per lamp intentionally added

### **2.6 Tris (2-chloroethyl) phosphate (TCEP)**

- For the following applications, more than 1000 ppm (or 0.1 wt%) of TCEP contained in the parts has been newly classified as Level 2, considering updates of EU laws and regulations such as REACH No. 1907/2006: "flame retardants for plastics, resins, fabrics, and textiles". The effective date of the ban on the delivery is set to July 1, 2014.

### **2.7 Hexabromocyclododecane (HBCDD)**

- For the following applications, more than 1000 ppm (or 0.1 wt%) of HBCDD contained in the parts has been newly classified as Level 2, considering updates of EU laws and regulations such as REACH No. 1907/2006: "flame retardants for plastics and resins". The effective date of the ban on the delivery is set to January 1, 2015.

### **2.8 Dibutyltin (DBT) Compounds**

The effective date of the ban on the deliver is changed to July 1, 2014 for the applications that shall not be applied until January 1, 2015 by way of derogation in REACH No. 1907/2006.  
Also the following applications exempted from the regulation are classified into Exemption.  
"Additives of reused packaging components and materials for parts and devices"  
"Additives of packaging components and materials for devices, semiconductors, and any other components (e.g. trays, magazine sticks, reels, embossed carrier tapes)"

### **2.9 Specific azo compounds**

- The description has been revised. "More than 30 ppm (or 0.003 wt%) of the specific azo compounds in the textiles and leathers" has been classified as Level 1.



## **2.10 Formaldehydes**

- The description has been revised.

## **2.11 Polyvinyl chloride (PVC) and PVC blends**

- The descriptions of Level 1, Level 3, and Exemption have been revised by reviewing the status of replacing with alternative materials, technical issues, and illustrative examples of target parts.

## **2.12 Bis (2-ethylhexyl) phthalate, Dibutyl phthalate, Butyl benzyl phthalate, and Diisobutyl phthalate**

- For the following applications, more than 1000 ppm (or 0.1 wt%) of each of the above substances contained in the parts has been newly classified as Level 2, considering updates of EU laws and regulations such as REACH No. 1907/2006: "plasticizers for cables and cords (including plugs and connectors)". The effective date of the ban on the delivery is set to July 1, 2014.
- All uses other than the above have been classified as Level 3.

## **2.13 Diisononyl phthalate, Diisodecyl phthalate, Di-n-octyl phthalate, and Di-n-hexyl phthalate**

- The substances used as "plasticizers for cables and cords (including plugs and connectors)" have been classified as Level 3.

## **2.14 Specific benzotriazoles**

- Lenses and frames of eye glasses have been added to the applications.

## **2.15 Cobalt dichloride**

- The cobalt dichloride used for "humidity indicators" has been changed from Level 2 to Level 1.

## **2.16 Diarsenic trioxide and Diarsenic pentoxide**

- For the following applications, more than 1000 ppm (or 0.1 wt%) of each of the above substances contained in the parts has been newly classified as Level 2, considering updates of EU laws and regulations such as REACH No. 1907/2006: "antifoam agents or fining agents for LCD panels (including cover glasses, touch screens, and backlights)". The effective date of the ban on the delivery is set to July 1, 2014.

## **2.17 Boric acids and Specific Sodium borates**

- Boric acids and specific sodium borates in all applications have been newly classified as Level 3, considering the trend of EU laws and regulations such as REACH No. 1907/2006.

## **2.18 Additional rules for Batteries**

- "Zinc carbon batteries and alkaline batteries whose lead content, in proportion to their weight, is 0.2% or more" classified as Level 1 has been changed to "Zinc carbon batteries and alkaline batteries whose lead content, in proportion to their weight, is 0.1% or more", considering updates of EU laws and regulations.

## **2.19 Replacement of Chemical Substances contained in Parts of Specific Product Categories**

- Sony declares in "Sony Group Environmental Mid-Term Target" that: Sony analyzes the use of chemical substances and the contents in parts and products. Based on the risk evaluation, Sony identifies and discontinues high-risk uses of these substances. A new chapter "Replacement of Chemical Substances contained in Parts of Specific Product Categories" has been added.

## EXPLANATORY NOTES

### SS-00259

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

In the past year since the issue of the SS-00259 8th edition, laws and regulations pertaining to the practice of environmental production have been changed worldwide. This edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 8th edition.

### Part 1

## ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED

### 1. Table 4.1 List of "Environment-related Substances to be Controlled ('Controlled Substances')"

- The following substances are newly added to the list:
  - "Dibutyltin (DBT) compounds"
  - "Dioctyltin (DOT) compounds"
  - "Dimethyl fumarate (DMF)"
- The description "tributyltin (TBT) compounds and triphenyltin (TPT) compounds" is replaced by "trisubstituted organotin compounds (including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)".

### 2. Cadmium and cadmium compounds

- In accordance with the trend of laws and regulations such as EU Directive, cadmium in optical glass, which was included in Exemption, is newly classified into Level 2 in order for its deliveries to be banned on and after June 1, 2010.

### 3. Lead and lead compounds

- Some reviews are made in consideration of the trend of EU laws and regulations as below:
    - "Glass for all uses except those specified in Exemption" is newly classified into Level 2 in order for its deliveries to be banned on and after June 1, 2010.
    - "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%", which was categorized in Exemption, is newly classified into Level 2 in order for its deliveries to be banned on and after June 1, 2010.
    - Lead and lead compounds used for "Dielectric ceramic in capacitors for a rated voltage of less than 125 V AC or 250 V DC", which were categorized in Exemption, are newly classified into Level 2 in order for its deliveries to be banned on and after Jan. 1, 2012.
    - "Crystal glass as defined in Annex 1 (Categories 1, 2, 3 and 4) of EU Directive 69/493/EEC" is newly included in the list of Exemption. Note that its usage is allowed only when directed by Sony.
- Some descriptions in Exemption are reviewed.

### 4. Mercury and mercury compounds

- Some reviews are made in consideration of the trend of EU laws and regulations as below:
    - The following item is newly classified into Level 2 in order for its deliveries to be banned on and after Jan. 1, 2011.
      - "Cold cathode fluorescent lamps (CCFL) and external electrode fluorescent lamps (EEFL):  
Not over 500 mm in length: Mercury content per lamp is 3.5 mg or more, and less than 5 mg"
    - The following item is added to the list of Exemption.
      - "Cold cathode fluorescent lamps (CCFL) and external electrode fluorescent lamps (EEFL):  
Over 1500 mm in length: Mercury content per lamp is less than 13 mg."
- Some descriptions in Exemption are reviewed.



## **5. Trisubstituted organotin compounds (including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)**

- Under laws and regulations such as REACH Regulation (EC) No. 1907/2006, the target substances are expanded from "Tributyltin (TBT) compounds and triphenyltin (TPT) compounds" to "Trisubstituted organotin compounds (including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)".

## **6. Dibutyltin (DBT) compounds**

- Under laws and regulations such as REACH Regulation (EC) No. 1907/2006,  
"All uses (e.g. additives for plastic)  
Materials whose tin concentration is 0.1 wt% or more"  
is newly classified into Level 2 in order for its deliveries to be banned on and after July 1, 2011.

## **7. Dioctyltin (DOT) compounds**

- Under laws and regulations such as REACH Regulation (EC) No. 1907/2006, "Textiles whose tin concentration is 0.1 wt% or more" is newly classified into Level 2 in order for its deliveries to be banned on and after July 1, 2011.

## **8. Specific azo compounds**

- The normative reference "76/769/EEC" is replaced with "REACH Regulation (EC) No. 1907/2006 Annex XVII".

## **9. Polyvinyl chloride (PVC) and PVC blends**

- "Suction cups for mounting in-vehicle products" which was classified into Level 3 becomes the target of Level 1.

## **10. Beryllium oxide**

- Since there were no targets applicable to "Specific uses which have no alternative materials" which was categorized in Level 3, "All uses" is classified into Level 1.

## **11. Perfluorooctane sulfonates (PFOS)**

- In accordance with the trend of regulations on PFOS compounds of Stockholm Convention on Persistent Organic Pollutants, overdue Level 2 is changed to Level 1.  
Accordingly, "All uses of PFOS except those specified in Exemption" is classified into Level 1.  
The following items are newly included in the list of Exemption:  
"Photographic films for professional use"  
"Resists for semiconductors"

## **12. Dimethyl fumarate (DMF)**

- Under laws and regulations such as European Commission decision, "all uses (e.g. fungicides and desiccant agents)" is newly classified into level 1.

## **13. Rules for batteries**

- The following sentence is newly provided for clarification of the rules regarding "Batteries" and "Battery packs": "For "Batteries" and "Battery packs", parts which constitute except the "cell" follow the standards specified in Section 4.1 and 4.2 also.
- The following items are newly added to the list of Cd (Level 1):
  - 1) Zinc carbon batteries, alkaline batteries, and a nickel hydrogen (nickel-MH) rechargeable batteries whose cadmium content, in proportion to their weight, is 0.001% or more.
  - 2) "Batteries" or "Battery packs" built into an instrument fixed, whose cadmium content in any cell is 0.0005% or more.
- The following item is newly added to the list of Pb (Level 1):
  - 1) "Batteries" or "Battery packs" built into an instrument fixed, whose lead content in any of their cells is 0.1% or more.

## **14. Standard for measurement**

- The reference standards for measurement are reviewed.



## **EXPLANATORY NOTES**

### **SS-00259**

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

In the past year since the issue of the SS-00259 7th edition, laws and regulations pertaining to the practice of environmental production have been changed worldwide. This edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 7th edition.

### **Part 1**

## **ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED**

### **1. Table 4.1 List of "Environment-related Substances to be Controlled ('Controlled Substances')"**

The following substances are newly added to the list:

- cobalt dichloride (as a new substance);
- ozone depleting substances (they were originally included in the first edition and deleted in the second edition.)

### **2. Mercury and mercury compounds**

The target of Level 1 is redefined to clearly indicate that "all uses except those specified in Exemption" becomes Level 1.

### **3. Perfluorooctane sulfonates (PFOS)**

In accordance with the trend of regulations on PFOS compounds of Stockholm Convention on Persistent Organic Pollutants, all uses of PFOS except those specified in Level 1 and Exemption are newly classified into Level 2 in order for their deliveries to be banned on and after April 1, 2010.

### **4. Cobalt dichloride**

Under laws and regulations such as EU Directive, cobalt dichloride used as a moisture indicator for a desiccant agent (e.g. silica gel) is added as a new Level 1 substance.

Cobalt dichloride which is contained in a humidity indicator card is added as a new Level 2 substance in order for its deliveries to be banned on and after April 1, 2011.

### **5. Ozone depleting substances (ODS)**

Since the second edition, ODS have not been listed as a controlled substance in this Standard. To clearly indicate a total ban on the use of ODS, ODS in Table 4.2c are included as a Level 1 substance. The following descriptions are provided to clarify the targets:

- all uses for refrigerant, insulation and other products;
- components and materials processed with ODS during cleaning, foaming and other processes.

### **6. Standard for measurement**

The reference standards for measurement are reviewed. IEC 62321:2008 which was newly established as an international standard is included as a normative document for sample preparation and measurement of four heavy metals (cadmium, lead, mercury, and hexavalent chromium).

## EXPLANATORY NOTES

### SS-00259

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

In the past year since the issue of the SS-00259 6th edition, laws and regulations pertaining to the practice of environmental production have been changed worldwide. This edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 6th edition.

### Part 1

#### 1. SCOPE

To clarify the target parts and materials in Section 2.1 "Scope applicable to parts and materials," the sentences are changed.

#### 2. ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED

##### 2.1 Table 4.1 List of "Environment-related Substances to be Controlled ('Controlled Substances')"

The following substances are newly added to the list:

- Perfluorooctane sulfonates (PFOS)
- Specific benzotriazole

##### 2.2 Lead and lead compounds

The following note sentence is included in the list of exemption items. "Allowable concentration of lead contained in conductive materials of solder for anisotropic conductive film (ACF) and anisotropic conductive paste (ACP) should be less than 1000 ppm."

##### 2.3 Beryllium oxide

"All uses of beryllium oxide" which was classified into Level 2 becomes the target of the Level 1 as "All uses except those specified in Level 3." "Specific uses which have no alternative materials" is newly categorized as Level 3.

##### 2.4 Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)

"All uses (e.g. refrigerant and insulation)" which was classified into Level 3 becomes the target of the Level 1 as "All uses installed into product (e.g. refrigerant and insulation)."

##### 2.5 Perfluorooctane sulfonates (PFOS)

PFOS that meets the following criteria is included and classified into Level 1.

- Materials whose PFOS concentration is 0.1 wt% or more
  - Textiles or other coated materials whose amount of PFOS is 1  $\mu\text{g}/\text{m}^2$  or more of the coated material
- PFOS used for "photographic coatings applied to films, papers, or printing plates" and "photoresists or anti reflective coatings for photolithography processes" is included and classified into Exemption.

##### 2.6 Specific benzotriazole

Specific benzotriazole used for "ultraviolet protectants and ultraviolet absorbers applied to decorative laminate, developing papers, molded plastic parts" is included and classified into Level 1.



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## **2.7 Additional rules for packaging components and materials**

To clarify the target parts in the list of "Not Packaging," the sentence "Such as index-card or label for CD and other recording media" is replaced with "Such as index-card or label for CD and other recording media which are defined as part of product."

To ensure consistency of word, terms "Packaging," "Packaging materials," and "Packaging components" that have similar meanings are replaced by one term "packaging components and materials."

## **2.8 Rules for batteries**

Definitions of "Battery," "Battery pack," and "Button Cell" are clearly specified.

The following batteries and battery packs are included in the list of Cd as Level 1.

- "Batteries" whose cadmium content, in proportion to the total weight of each one, is 20 ppm or more
- "Battery packs" whose cadmium content, in proportion to the total weight of each one, is 20 ppm or more

A new target "Carbon zinc batteries and alkaline batteries whose lead content, in proportion to the total weight of each one, is 0.2% or more" is included in the list of Pb as Level 1.

The sentence "Carbon zinc batteries and alkaline batteries designed for China whose mercury content, in proportion to the total weight of each one, is 0.0001% or more" is replaced with the sentence "Carbon zinc batteries and alkaline batteries whose mercury content, in proportion to the total weight of each one, is 0.0001% or more" in the list of Hg as Level 1.

## **EXPLANATORY NOTES**

### **SS-00259**

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

In the past year since the issue of the SS-00259 5th edition, laws and regulations pertaining to the practice of environmental production have been changed worldwide. This edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 5th edition.

### **Part 0**

#### **1. POSITION OF THIS TECHNICAL STANDARD**

The term "Management Standards regarding the Environment-related Substances Requiring Control and Included in Products" is corrected to the term "Rules for Non-Use of Controlled Environmental Substances in Products."

#### **2. OPERATIONAL PROCEDURE AND BASIC POLICY**

In the fifth edition, the words "Standards" and "Technical Standards" were both used, therefore the wording of "Technical Standard" comes to be used for consistent description in this edition.

### **Part 1**

#### **1. TERMS AND DEFINITIONS**

##### **1.1 Management standards: Level 1**

To clarify the definition of Level 1, the explanation is changed from "The substances and their uses classified into this Level are those that must be banned immediately." to "The substances and their applications classified into this Level are those that are banned for the use in parts and materials."

##### **1.2 Management standards: Level 2**

To clarify the definition of Level 2, the explanation is changed from "On or after the date set in each table, the substances in the respective tables shall be reclassified into Level 1 for an immediate ban on their use in parts and materials." to "On the date set in each table, the substances and their applications in the respective tables shall be reclassified into Level 1."

#### **2. ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED**

##### **2.1 Table 4.1 List of "Environment-related Substances to be Controlled (Controlled Substances)"**

The following substances are newly added to the list:

- Beryllium oxide
- Beryllium copper
- Specific phthalates (DEHP, DBP, BBP, DINP, DIDP, DNOP, DNHP)
- Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)

To clarify the subject of "Controlled Substances," the chemical name "Chlorinated paraffins" is modified by the term "Short-chain chlorinated paraffins."

##### **2.2 Lead and lead compounds**

The explanation in the Level 1 column is changed from "Electroless nickel plating film and electroless gold plating film whose lead content is more than 1000 ppm" to "Electroless plating films such as electroless nickel plating and electroless gold plating whose lead content is more than 1000 ppm."

The explanation in the Level 3 column is changed from "Electroless nickel plating film and electroless gold plating film whose lead content is 1000 ppm or less" to "Electroless plating films such as electroless nickel plating and electroless gold plating whose lead content is 1000 ppm or less."



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### 2.3 Hexavalent chromium compounds

The following explanation is deleted: "Metal chromium and chromium contained in alloys are excluded from the targets."

### 2.4 Short-chain chlorinated paraffins (SCCP)

The term "Cl = 48 wt% or more" is deleted.

### 2.5 Specific azo compounds

The sentences, "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" are deleted from the Level 1 and Level 2 columns. These are the description of specific azo compounds, and provided in the top column.

### 2.6 Polyvinyl chloride (PVC) and PVC blends

The parts and materials made of PVC and PVC blends are reviewed and reclassified as shown in the table "Substances: Polyvinyl chloride (PVC) and PVC blends," taking into consideration the progress in developing alternative materials and in solving associated technical problems.

The following substances which were classified into Level 2 become the targets of the Level 1.

- Sheets and laminates used for the exterior of wooden speakers
- Insulating plates, decorative panels, labels, sheets, and laminates
- Flexible flat cables (FFC)

"Wiring clip used for the inside of devices (made of polyvinyl chloride-coated metal)" is added as new Level 3 parts.

### 2.7 Beryllium oxide

All uses of beryllium oxide are added as new Level 2 compound in order for their deliveries to be banned on and after April 1, 2008.

### 2.8 Beryllium copper

All uses of beryllium copper are added as new Level 3 compound.

### 2.9 Specific phthalates (DEHP, DBP, BBP, DINP, DIDP, DNOP, DNHP)

Specific phthalates used as plasticizer in polyvinyl chloride resin for cable coating, cord coating, plugs and connectors are added as new Level 3 compounds.

### 2.10 Hydrofluorocarbon (HFC) and perfluorocarbon (PFC)

All uses of hydrofluorocarbon and perfluorocarbon are added as new Level 3 compounds.

### 2.11 Additional Rules for Packaging Materials

To clarify the measurement procedure for packaging materials (hexavalent chromium) in table 4.3, the sentences are changed as follows:

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.

### 2.12 Rules for Batteries

Definitions of "Battery" and "Battery pack" are clearly specified.

The following sentence is newly provided for clarification of the rules regarding "Batteries" and "Battery packs": "For "Batteries" and "Battery packs," follow the standards specified in Section 4.1 and 4.2 also." NiCd batteries which were classified into Level 2 become the targets of the Level 1.



## **EXPLANATORY NOTES**

### **SS-00259**

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

In the past year since the issue of the SS-00259 4th edition, laws and regulations pertaining to the practice of environmental production have been changed worldwide. The Part 1 of the SS-00259 5th edition is issued to satisfy the requirements of changed statutes, as well as to address the most frequently asked questions about the 4th edition. The Part 0 of the SS-00259 5th edition remains the same as that of the 4th edition.

### **1. PURPOSE**

To explicitly state the applicable scope of the SS-00259, the term "Sony products" is modified by the term "Sony electronics products."

### **2. SCOPE**

#### **2.1 Scope applicable to parts and materials, and scope applicable to products**

To explicitly state the applicable scope of the SS-00259, the term "Sony products" is modified by the term "Sony electronics products," and the phrase "third parties' products" is modified by the phrase "third parties' electronics products." The term "remote controllers" is corrected to the term "remote commanders."

#### **2.2 Scope applicable to products**

This applicable scope includes the products that are not only sold or distributed but also loaned to the parties involved. This section is modified accordingly.

### **3. TERMS AND DEFINITIONS**

The phrase "the date on or after which Sony won't accept the targets" is replaced with the phrase "effective date of the ban on the delivery" in the 5th edition in English. The definition remains the same as that of the earlier editions.

The following definition, which was placed under the heading of "Impurity," is written under the "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.

The instruction for the allowable concentration is partly modified and added as a note, as follows: 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.

#### **4. MANAGEMENT STANDARDS FOR "ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED"**

##### **4.1 Table 4.1 List of "Environment-related Substances to be Controlled ('Controlled Substances')"**

The chemical name "polybrominated diphenylethers (PBDE)" is modified by the phrase "polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])" to clarify the scope of the substances.

##### **4.2 Cadmium and cadmium compounds**

To clearly define the surface treatment for the cadmium and cadmium compounds, which are subject to the Level 1 control, the "surface treatment (e.g. plating), coating" is replaced with "surface treatment (e.g. electroplating, electroless plating, etc.) and coating."

The "parts composed of metals containing zinc (e.g. brass, zinc for die casting) whose cadmium concentration is more than 100 ppm," which were categorized as Level 2, are classified into Level 1 in order for their deliveries to be immediately banned. The "zinc for die casting" is replaced with "hot dip galvanizing."

The "ASTM F963-03" and "ASTM D 5517" are included as examples of the extraction methods to which the preconditioning methods specified in this Standard are not applicable.

##### **4.3 Lead and lead compounds**

In the 4th edition, "stabilizers used for electroless gold plating as well as electroless nickel plating and lead contained in additives" were categorized as Level 3. It is, however, found that the lead content in the electroless nickel plating film or electroless gold plating film may be more than 1000 ppm depending on the control method. The "electroless nickel plating film and electroless gold plating film whose lead content is more than 1000 ppm" are classified into Level 1 in order for their deliveries to be immediately banned.

The "ASTM F963-03" and "ASTM D 5517" are included as examples of the extraction methods to which the preconditioning methods specified in this Standard are not applicable.

##### **4.4 Hexavalent chromium compounds**

The subject to the Level 1 control, "all purposes (e.g. those [1] contained in inks and paints as components of their pigments, and [2] applied for preventing rust on surfaces of plating [on screws, steel plates, etc.]), " are modified in a manner which is consistent with the current practice on the ground, as follows: "constituents of parts or materials (e.g. inks, paints, additives, etc.) " and "residues in the surfaces of screws, steel sheets, etc. that are processed with plating or conversion coating. "

##### **4.5 Chlorinated paraffins (CP)**

All uses of chlorinated paraffins are classified into Level 1 in compliance with the Norwegian regulations etc.

##### **4.6 Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])**

The chemical name "polybrominated diphenylethers (PBDE)," which is classified into Level 1 for the immediate ban on its delivery, is modified by the phrase "polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])" to provide readers with a better understanding of the scope of the substances.

##### **4.7 Specific azo compounds**

Descriptions of the "specific azo compounds," which form one or more certain amine compounds through designated decomposition methods, and those of the "specific amine compounds," listed in Table 4.2a, are modified to make them easier to understand and to clarify that both substances are subject to the Level 1 control.

The normative reference "Germany Law for Foods and Consumer Products" is replaced with "EU Directive 76/769/EEC."



#### **4.8 Polyvinyl chloride (PVC) and PVC blends**

The parts and materials made of PVC and PVC blends are reviewed and reclassified, taking into consideration the progress in developing alternative materials and in solving associated technical problems, as shown in the table "Substances: Polyvinyl chloride (PVC) and PVC blends."

In the 4th edition, the parts and materials under Level 2 were to be reclassified into Level 1 according to their respective dates on which they become components of new mass-produced products. In this 5th edition, those shall be reclassified into Level 1 in the same way as other parts and materials.

The "substrates for FeliCa contactless IC cards" have never contained PVC or PVC blends. The "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)" have been made from alternative materials to PVC or PVC blends since the establishment of this Standard. This 5th edition classifies the above products and materials into Level 1 for a continued ban on the use of the Controlled Substances.

The effective date of the ban on the delivery for Level 2 is extended from January 1, 2007 to April 1, 2007.

The "flexible flat cables (FFC)" are added to the 5th edition as new Level 2 parts.

The "suction cups for mounting in-vehicle products" and "coating agents and fabrics for the carrying bags, carrying cases, and carrying pouches, which are designed for exclusive use with professional-electronics products" are added as new Level 3 parts.

#### **4.9 Table 4.3 Additional rules for packaging materials**

The instructions for measurement methods for hexavalent chromium are modified in an easy-to-understand manner as follows: 1) First analyze total chromium content and verify that the total concentration of cadmium, lead, mercury and total chromium is less than 100 ppm. When analyzing, the same preconditioning methods as those used for cadmium and lead are applicable. 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. 3) Analyze and confirm that no hexavalent chromium is present, using the standard methods for detecting hexavalent chromium provided on page 14.

The "warm water sampling process," which is a preconditioning method for hexavalent chromium detection, is replaced with "boiling water extraction."

To clarify that Table 4.3a illustrates some typical packaging materials, the table caption is changed from "Descriptions of packaging materials" to "Illustrative examples of PACKAGING materials and NOT PACKAGING materials."

#### **4.10 Table 4.4 Rules for batteries**

The "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" are added and classified into Level 1, in compliance with the applicable Chinese regulations.

The above batteries "whose mercury content, in proportion to the total weight of each one, is less than 0.0001%" are added and categorized as Exemption.

The "all NiCd batteries," which were classified into Level 1, become targets of Level 2 in order for their deliveries to be banned on and after January 1, 2007.

The "coin cell batteries," which were incorrectly specified in the earlier editions in English, are corrected to "button cell batteries."

## **EXPLANATORY NOTES**

### **SS-00259-1**

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

In the past year since the issue of the third edition of SS-00259-1, statutes pertaining to the practice of environmental production have been changed worldwide. This fourth edition of SS-00259-1 is issued to satisfy the requirements of changed statutes and to clarify the contents, which might have been unclear for readers.

### **1. "PURPOSE"**

In accordance with current requirements on the market worldwide, the "substances to be reduced" become the "excluded substances," which means those are excluded from the substances to be banned ('Controlled Substances') defined in the third edition of SS-00259-1.

### **2. "SCOPE"**

#### **2.1 Scope applicable to products, and Scope applicable to parts and materials**

In order of the level of importance, the sub-clauses of "2.1 Scope applicable to products" and "2.2 Scope applicable to parts and materials" are reversed with "2.1 Scope applicable to parts and materials" and "2.2 Scope applicable to products."

#### **2.2 Scope applicable to parts and materials: "repair parts"**

The "repair parts" is defined as the "repair parts for products on the market" in accordance with the definition in other documents related to this Standard.

### **3. "TERMS AND DEFINITIONS"**

#### **3.1 Management standards: "Level 3"**

Management criteria for the Level 3 substances are updated in an attempt to further reinforce controls as follows:

"No deadline for banning the use is currently set for the substances classified into this level. They shall be classified into Level 2 to be banned in phases, depending on the availability of alternative parts and materials that satisfy the intended application."

#### **3.2 Management standards: "Exemption"**

The Levels 1 to 3 are used to specify the 'Controlled Substances,' and some of them that were classified into one of those in the third edition of SS-00259-1 are classified as "Exemption" as explained in the following:

"The substances classified into this level are those not regulated by the law or excluded from the 'Controlled Substances' due to insufficient supply of adequate alternative parts and materials that satisfy the intended application."



#### **4. "ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED ('CONTROLLED SUBSTANCES')"**

##### **4.1 Table 4.1 List of "Environment-related Substances to be Controlled ('Controlled Substances')"**

The polychlorinated naphthalenes (PCN) is classified into the chlorinated organic compounds, and the polychlorinated terphenyls (PCT) is added to it as a new substance.

In the organic tin compounds, the 'Controlled Substances' are no other than tributyl tin compounds and triphenyl tin compounds, and therefore the wording of "organic tin compounds" is deleted.

As not all of the azo compounds are subject of the 'Controlled Substances,' the wording of "azo compounds" is replaced with the "specific azo compounds." Details are provided in Table 4.2.

##### **4.2 Cadmium and cadmium compounds**

With the aim of making the reference tables clearer, descriptions of batteries by substance are consolidated into Table 4.4.

The following substances, which were classified into Level 2, become Level 1 to be immediately banned:

- "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)"

Note: The glass includes adhesives, resistor elements, glass frit, conductive pastes (silver or copper ones), and sealing materials.

- "Solder (whose cadmium concentration is more than 20 ppm)"
- "CdS-photocells and the phosphors contained in fluorescent display devices"
- "Resistor elements (glass frit)"

The following substances are newly classified into Level 2:

- "Parts composed of metals containing zinc (e.g. brass, zinc for die casting) whose cadmium concentration is more than 100 ppm"

Note: The allowable concentrations of impurities in metal parts containing a large amount of zinc (e.g. brass and zinc for die casting) is up to 100 ppm regardless of how they are included in the metal parts because the use of recycled materials is increasing on the market and management of the allowable concentrations of less than 100 ppm is not practical at the moment.

The following substances, which were classified into Level 3, are excluded from the 'Controlled Substances':

- "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, for which high reliability is required and which has no alternative materials"
- "Optical glass, filter glass"

The note on the pre-conditioning is partly revised to stress the importance of implementing the pre-conditioning methods in line with the note as in the following:

"In the process of preconditioning, precipitates (insoluble matter) must be totally dissolved by some means (e.g. alkali fusion)."

As the elution methods, which are inapplicable to the pre-conditioning methods prescribed in this Standard, ASTM F963-96a and ISO 8124-3 are added to the notes on the measurement methods.



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#### 4.3 Lead and lead compounds

With the aim of making the reference tables clearer, descriptions of batteries by substance are consolidated into Table 4.4.

The following substances, which were classified into Level 2, become Level 1 to be immediately banned:

- "Surface coatings for the external electrodes, lead wires, etc. of the parts contained in AC adaptors, remote commanders, semiconductor devices, etc."
- "Of the types of leaded solder, those that satisfy both of the following conditions: (1) leaded solder that contains less than 85 wt% of lead; and (2) leaded solder whose lead concentration is more than 1000 ppm"
- "All kinds of alloys (including solder materials) whose individual lead/lead compound concentration exceeds the regulated allowable concentration"
- "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"
- "Paints and inks used for areas other than the outer and exposed ones of devices"

The following substances, which were classified into Level 3, are excluded from the 'Controlled Substances':

- "High-melting point solder for internal connections used for parts and devices (the leaded solder whose lead content is 85 wt% or more)"
- "Electronic ceramic parts (e.g. piezoelectric materials, dielectric ones, and magnetic ones [ferrites])"
- "Optical glass, filter glass"
- "Glass materials used for electrical parts, cathode-ray tubes, or vacuum fluorescent displays (The Glass materials include adhesives, resistor elements, glass frit, conductive pastes [silver or copper ones], and sealing materials)"
- "Allowable concentration of lead as an additive in the following alloys<sup>(★1)</sup>"

<sup>(★1)</sup>	Type of alloy	Allowable content of lead
	Steel	Up to 0.35 wt%
	Aluminum alloys	Up to 0.4 wt%
	Copper alloys (including brass and phosphor bronze)	Up to 4 wt%
	Solder	Up to 1000 ppm

The wording of "less than" used to specify the allowable content of lead and lead compounds is changed to "up to" in compliance with relevant statutes.

The "solder pastes used under C4 (Controlled Collapse Chip Connection) bumps," specified in the third edition, is amended to "solder to complete a viable electrical connection between semiconductor die and carrier within integrated circuit Flip Chip packages," according to relevant statutes, and "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% and less than 85% by weight", is added.

The note on the pre-conditioning is partly revised to stress the importance of implementing the pre-conditioning methods in line with the note as in the following:

"In the process of preconditioning, precipitates (insoluble matter) must be totally dissolved by some means (e.g. alkali fusion)."

As the elution methods, which are inapplicable to the pre-conditioning methods prescribed in this Standard, ASTM F963-96a and ISO 8124-3 are added to the notes on the measurement methods. EN 1122, which must not be used in the pre-conditioning methods for lead, is also added to the notes since it may result in inaccurate measured values due to lead sulfate precipitates.

#### 4.4 Mercury and mercury compounds

With the aim of making the reference tables clearer, descriptions of batteries by substance are consolidated into Table 4.4.

The following substances, which were classified into Level 2, become Level 1 to be immediately banned:

- "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"
- "Mercury and mercury compounds except those classified as Exemption"

The following substances, which were classified into Level 3, are excluded from the 'Controlled Substances':

- "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"

#### 4.5 Hexavalent chromium compounds

The "tanning" is deleted from the targets of the 'Controlled Substances' because leather end products were evaluated by the elution methods of hexavalent chromium, specified in this Standard, and the results showed no elution.

The following substances, which were classified into Level 2, become Level 1 to be immediately banned:

- Hexavalent chromium compounds used for "all purposes (e.g. those [1] contained in inks and paints as components of their pigments, and [2] applied for preventing rust on surfaces of plating [on screws, steel plates, etc.])"

#### 4.6 Chlorinated organic compounds

The polychlorinated naphthalenes (PCN) is classified into the chlorinated organic compounds, and the polychlorinated terphenyls (PCT) is added to it as a new substance.

In compliance with the regulation enforced in the Netherlands, the CI of the chlorinated paraffins (CP) is reduced from "50 wt% or more" to "48 wt% or more."

#### 4.7 Brominated organic compounds

The following polybrominated diphenylethers (PBDE), which were classified into Level 2, become Level 1 to be immediately banned:

- "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)"
- "Parts whose molding dies have been made since January 2003 must not contain PBDE"

#### 4.8 Tributyl tin compounds and triphenyl tin compounds

In the organic tin compounds, the 'Controlled Substances' are no other than tributyl tin compounds and triphenyl tin compounds, and therefore the wording of "organic tin compounds" is deleted.

#### 4.9 Azo compounds

As not all of the azo compounds are subject to the 'Controlled Substances,' the wording of "azo compounds" is replaced with the "specific azo compounds." To further clarify the azo compounds classified into Level 3, the following note is added:

"The specific azo compounds may produce amines specified in Table 4.2a when they are decomposed on the basis of a test method specified in Germany Law for Foods and Consumer Products."



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#### 4.10 Polyvinyl chloride (PVC) and PVC blends

Because of insufficient supply of adequate alternative parts and materials to the polyvinyl chloride (PVC) and PVC blends on the market, PVC and PVC blends categorized as the 'Controlled Substances' in the third edition have been reviewed and updated on a product basis. The products comprised of PVC and PVC blends are to be banned according to the availability of alternatives as specified in the letter with document number of QAR-04-006, as follows:

The following substances are classified into Level 1 to be immediately banned:

- "Sheets used as packaging materials (e.g. air cushions, blister packs, and protective bags)"
- "Packaging materials to be packaged together with the product, such as remote commanders and cables (e.g. bags, tapes, cartons, blister packs)"
- "Vinyl ties made of PVC and PVC blends"

The following substances are classified into Level 2 with target dates for banning the use:

Note: Sony will not accept any of the following substances, which will become a component of an existing or new Sony product on and after the designated target dates.

- "Heat shrink tubes"
- "Sheets and laminates used for the exterior of wooden products (e.g. laminates for wooden cabinets and wooden speakers)"

The following substances are classified into Level 2 with target dates for banning the use:

Note: Sony will not accept any of the following substances, which will become a component of a new Sony product that is to be in commercial mass production on and after the designated target dates.

- "Parts consisting of wires (e.g. connectors with cords) and wires used for internal wiring (e.g. motor leads)"
- "Power supply cords, including plugs, connectors, or cord bushes (2P/3P [Electrical Appliances and Material Safety Law])"
- "Coating for insulation and protection used for the inside and outside of devices, insulated tubes, insulated boards, decorative panels, labels, carrying belts, spacers, holders, covers, ducts, etc."
- "Connection cords (1): those for wearable equipment (e.g. cables for ear phones, head phones, ear microphones)"
- "Connection cords (2): those for USB, i.LINK, video cords, AC adaptors secondary leads, multi cables, speaker cords"
- "Harnesses and processing wires designed by Sony (e.g. coaxial cables, flat wires, double insulation wires, shielded wires)"

The following substances are classified into Level 3:

- "Power supply cords, including plugs, connectors, or cord bushes (2P/3P [U/C])"
- "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"

The following substances, which were classified into Level 3, are excluded from the 'Controlled Substances':

- "Binders made of resin"
- "Polyvinyl electrical wires for high voltage"
- "Insulating tapes"
- "Speaker grilles"
- "Power supply cords for import into EU countries"
- "Parts, which are not classified into Level 1, 2, or 3, and use the blends made from vinyl chloride copolymers or polyvinyl chloride and from other polymers"

The following substances are particularly classified as Exemption due to the unavailability of appropriate alternative technology:

- "Transformer leads of which the joint is fixed by varnish impregnation"
- "Curl cords"
- "Extra fine electrical wires that are AWG (American Wire Gauge) 36 or more"
- "Use of PVC and PVC blends in the professional-use cables, to which general-purpose ones cannot be applied (e.g. cables for broadcast cameras and microphones)"



#### **4.11 Additional rules for packaging materials containing heavy metals**

The measurement methods are further clarified.

Packaging materials are defined based on specific products to clarify them in an easy-to-understand manner.

#### **4.12 Additional rules for batteries**

With the aim of making the reference tables clearer, descriptions of batteries by substance (cadmium, lead, and mercury) are consolidated into Table 4.4.

The following substances, which were classified into Level 3, are excluded from the 'Controlled Substances':

- Lead used in 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 used for plastics (including rubber), paints, and inks for battery packs, which are classified into Level 1, are subject to the corresponding regulations"
- Mercury used in the "coin cell batteries whose mercury content, in proportion to the total weight of each one, is less than 2%" and "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%"

#### **4.13 Update on 'Controlled Substances'**

In the fourth edition of SS-00259-1, no substance other than the polychlorinated terphenyls (PCT) is added to the 'Controlled Substance.' Other substances, which were studied to evaluate whether to be newly classified as the 'Controlled Substances,' are not included in this fourth edition, because they have no possibility to be used in Sony products in the future.

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## **EXPLANATORY NOTES**

### **SS-00259**

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

One year has passed since the issue of the 2<sup>nd</sup> edition. This edition, the 3<sup>rd</sup> one, contains descriptions derived from the following matters that have changed during this one-year: Environment-related laws in various countries and environmental activities in various areas/organizations. The 3<sup>rd</sup> edition also specifies the contents to which requests/comments have been made during the same period.

Besides, we have checked if contents of PART 0 require revisions.

Our conclusion is that no revisions are necessary; therefore the contents of PART 0 in the 2<sup>nd</sup> edition will continuously be valid.

### **1. SCOPE APPLICABLE TO PARTS AND MATERIALS**

A description, "Repair parts (Sony will later issue a notice describing how to handle some of them)," is newly written because special rules are provided for some repair parts that fulfill the following conditions: Those which Sony has already received and for which materials and dyes cannot be changed.

### **2. "TERMS AND DEFINITIONS"**

#### **2.1 Level 3--A management standard**

To clarify the definition of Level 3, the following explanation is newly provided: "After Sony judges that alternative parts or materials are available for them (= the substances and purposes classified at Level 3), or that they can be used thanks to alternative technologies, Sony will actively introduce and use the substances and the purposes."

#### **2.2 Plastics defined in SS-00259**

The 2<sup>nd</sup> edition did not clearly define the range of plastics. The 3<sup>rd</sup> edition defines it as "Materials and raw materials composed of synthetic high-molecular polymers" and describes examples such as resins, films, adhesives, adhesive tapes, molded products, products made of synthetic rubber, and plastics made from raw materials of plant origin.

### **3. "ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED ('THE CONTROLLED SUBSTANCES')"**

#### **3.1 Cadmium and cadmium compounds**

To clearly define the range of cadmium and cadmium compounds, the explanation below is newly provided for "Surface treatment (e.g. plating), coating" in the Level 1 column.

"However, the plating of electrical contacts, for which high reliability is required and which has no alternative materials, does not fall under the above categories."

The Level 1 column now contains "The Nickel and NiCd batteries that are received as new parts," which used to be classified at Level 2, because of EU Battery Directive and because "April 1, 2003," the date which was specified in the 2<sup>nd</sup> edition and on or after which Sony wouldn't receive the targets, has already passed.

In this regard, "The month in or after which Sony won't receive the targets" for "All Nickel and NiCd batteries" is changed from "in or after January 2005" to "in or after January 2007."

The Level 3 column now contains new targets--optical glass and filter glass--because it is difficult to establish technologies for developing materials that will replace them.

To clarify the targets whose cadmium content must be measured, the following description is provided:

"Allowable concentration: Less than 5 ppm for plastics [including rubber], paints, and inks."



### 3.2 Lead and lead compounds

To comply with EU Battery Directive, we now, in the Level 1 column, specify new targets: "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."

To clarify the target areas classified at Level 2, the following descriptions are provided:

- 1) The paints and inks used for outer and exposed areas of devices (effective on or after April 1, 2004); and
- 2) The paints and inks used for areas other than the outer and exposed ones of devices (effective on or after January 1, 2005).

The descriptions below that are provided in the Level 3 column explain the materials, parts, and products for which technologies for developing substitutes are not readily available.

- 1) Electronic ceramic parts (e.g. piezoelectric materials, dielectric ones, and magnetic ones [ferrites])
- 2) Optical glass, filter glass
- 3) Stabilizers used for electroless gold plating as well as electroless Nickel plating and lead contained in additives
- 4) Solder paste used under C4 (Controlled Collapse Chip Connection) bumps
- 5) 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, both leaded solder and the lead used for plastics (including rubber), paints, and inks which are classified at Level 1 or 2 are subject to the corresponding regulations.

A supplementary explanation, "including brass and phosphor bronze," is provided in the column for copper alloys.

To clarify the targets whose lead content must be measured, the following description is provided: "Allowable concentration: Less than 100 ppm for plastics (including rubber), paints, and inks."

The "Standard for measurement" column now contains new examples of pre-conditioning methods.

### 3.3 Mercury and mercury compounds

To comply with China regulations on batteries, we now, in the Level 1 column, specify the following new targets:

- 1) Coin cell batteries whose mercury content, in proportion to the total weight of each one, is 2% or more; and
- 2) The batteries (excluding coin cell ones) and battery packs whose lead content, in proportion to the total weight of each one, is 0.0005% or more.

The mercury contents of batteries must be equal to or less than the above-mentioned ones, depending on battery types.

To comply with the latest regulations specified in EU RoHS, the mercury content of a straight-tube fluorescent lamp, in the Level 2 column, has been changed from "10 to 20 mg" to "5 mg or more." Similarly, the mercury content of the same type of lamp, in the Level 3 column, has been changed from "less than 10 mg" to "less than 5 mg."

Besides, the Level 3 column now contains the following targets:

- 1) Coin cell batteries whose mercury content, in proportion to the total weight of each one, is less than 2%; and
- 2) The batteries (excluding coin cell ones) and battery packs whose lead content, in proportion to the total weight of each one, is 0.0005% or more.

To comply with China regulations on batteries, "Silver oxide cells, alkaline-manganese cells, and air cells," specified in the 2<sup>nd</sup> edition, are no longer described in the Level 2 column.

### 3.4 Hexavalent chromium compounds

To clarify the targets that must not contain hexavalent chromium compounds, the following explanation is newly provided: "Metal chromium and chromium contained in alloys are excluded from the targets."

Batteries and catalysts that used to be classified at Level 1 are no longer described because they do not contain the compounds any more.



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### 3.5 Chlorinated organic compounds

"Mirex (Perchlordecone)" is no longer described because it is difficult to obtain the substance in Japan and North America, and because the substance has not been used as a flame retardant.

### 3.6 Brominated organic compounds

Tetrabromobisphenol-A-bis-(2, 3-dibromopropylether) (Product name: FR-720, etc.) is now grouped as one of "Other brominated organic compounds" and classified at Level 3 because Dutch laws banning the manufacture and sales of FR-720, etc. no longer exist.

### 3.7 Formaldehyde

In the 2<sup>nd</sup> edition, "chipboard" was used for one of the targets. However, in the 3<sup>rd</sup> edition, general terms--fiberboard and particleboard--are used instead.

In the 2<sup>nd</sup> edition, two measurement methods--A chamber method specified in EN 717-1 and a perforator method specified in EN 120--were specified. This was based on investigations on laws and industry standards in various areas and countries.

The 3<sup>rd</sup> edition now describes a desiccator method specified in JIS and JAS standards in Japan. By considering the difference in value between formaldehyde-emission contents detected by the above desiccator method and those detected by chamber methods, we now specify F☆☆☆ as the standard formaldehyde-emission content derived from the desiccator method based on JIS A5905 and A5908.

### 3.8 Polyvinyl chloride (PVC) and PVC blends

To clarify the meaning of "sheets" described in the Level 2 column in the 2<sup>nd</sup> edition, the word is changed to "Sheets used as packaging materials (e.g. air cushions, blister packs, and Miramat [protective bags])."

For the same purpose, two types of descriptions are provided in the Level 2 and 3 columns respectively:

- 1) The insulation plates, tubes, and caps used for the outside of devices; and
- 2) The insulation plates, tubes, and caps employed in devices.

### 3.9 Regulations on heavy metals contained in packaging materials

Regarding all raw materials used for packaging materials, standards for each Controlled Substance must be satisfied. Furthermore, it is a must to keep rules for the four heavy metals--mercury, cadmium, lead, and hexavalent chromium.

One of the rules specifies the total concentration of the four heavy metals. In connection with this matter, plastics (including rubber), paints, and inks are subject to the following rules:

- A) "Less than 5 ppm" is determined as the allowable cadmium-concentration in the above materials.
- B) "Less than 100 ppm" is determined as the allowable lead-concentration in the materials. (The rule will become effective on or after April 1, 2004.)
- C) "Less than 100 ppm" is determined as the allowable total-concentration of the four heavy metals in the materials.

The above rules, however, may lead to the following situations:

- A) When the cadmium concentration and the lead one are 4- and 98 ppm respectively, rules 1) and 2) are satisfied.
- B) The total concentration, 102 ppm, neither satisfies rule 3) nor fulfills the requirements of relevant laws.

Since the hexavalent-chromium concentration cannot be measured by the specified equipment, at first, measure the total chromium-concentration. If the derived value is 100 ppm or more, analyze the hexavalent chromium contained in the total chromium.

To clarify the targets whose four-heavy-metal contents must be measured, the following sentence is newly provided: "This rule does not apply to cartons for returnable boxes owned by part suppliers."

## **EXPLANATORY NOTES**

### **SS-00259**

## **MANAGEMENT REGULATIONS FOR THE ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED WHICH ARE CONTAINED IN PARTS AND MATERIALS SECOND EDITION**

It was not easy to understand the 1<sup>st</sup> edition issued in April 2002, because its contents were complicated. In order to comprehend the information on each environment-related substance and the in-house management-situations for the substance, its structure has been changed to indicate management levels according to each environment-related substance. In this 2<sup>nd</sup> edition, the contents and structure are wholly revised in order that the information contained in it is understood surely and easily.

In the 1<sup>st</sup> edition, in order to manage environment-related substances, they were classified as "Banned substances" or "Totally-abolished substances." In the 2<sup>nd</sup> edition, management levels are set by the combination of one of "The Controlled Substances" and its purposes or a part where it is used. The combination is defined as a "Target"; this is a distinguished point of the 2<sup>nd</sup> edition.

After the issue of the 1<sup>st</sup> edition, investigations and discussions were held again on how to interpret the 1<sup>st</sup> edition, the actual situations in the industry, and inquiries and comments on relevant laws, in order to re-establish "Scope," "The time to ban on receiving the parts and materials," and the identification of environment-related substances. The PART 0 (GENERAL RULES) of SS-00259 used to be classified at "CLASS B (distributed only in Sony)." However, this revised version, the 2<sup>nd</sup> edition, is classified at "CLASS C" so that our business partners can further understand Sony's view and a basic policy of this Standard.

### **1. "SCOPE"**

"Scope applicable to products" is newly added; how to treat OEM products is clarified.

Thus, it has become clear that the regulations specified in SS-00259 do not apply to the production facilities and OA equipment used in Sony or Sony's plants. Accessories (the accessories of electronic products, or subsidiary products), packaging materials, subsidiary parts and materials, etc. are concretely written in "Scope applicable to parts and materials."

### **2. "TERMS AND DEFINITIONS"**

- 1) In the 1<sup>st</sup> edition, environment-related substances are called and defined as "Banned substances" or "Totally-abolished substances" as a way to manage them; however there was confusion because some exceptions were made, and "Target deadlines for the total abolishment" of some "Intended purposes" were set at the end of March 2004. In the 2<sup>nd</sup> edition, as a way to control environment-related substances, a management method, in which "Targets (combinations of substances and their purposes or where substances are used)" are specified, is adopted. Terms for substances such as "banned" and "totally-abolished" are no longer used.

In the 2<sup>nd</sup> edition, management standards are set for each substance to phase it out. In the later editions in the future, the same method is to be adopted.

- 2) The definitions of "Contained" and "Impurity" are newly added. Regarding the cadmium and lead contained in plastics, as written in this Standard, "less than 5 ppm" and "less than 100 ppm" are set respectively. When setting the values, the inclusions of the impurities are considered.
- 3) In the 1<sup>st</sup> edition, a term, "Target deadlines for the total abolishment," was used to indicate the time to phase out the substances. In the 2<sup>nd</sup> edition, however, a term, "The time to ban on receiving the parts and materials," is used because the conventional one is ambiguous.



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### **3. "ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED ('THE CONTROLLED SUBSTANCES')"**

#### **3.1 Cadmium and cadmium compounds**

The targets (where substances are used / their purposes) classified as "Immediately banned" are concretely written as much as possible. Regarding measurement standards, general "Pre-conditioning" and "Measurement method" are added.

"The time to ban on receiving the parts and materials" for the purposes classified at Level 2 (with the exception of NiCd batteries) is changed from "April 1, 2003" to "January 1, 2005."

Cadmium contained in metal parts (e.g. the ones whose main material is zinc) is regarded as an impurity. Therefore, their cadmium concentrations shall currently be disregarded.

"Less than 20 ppm" is set for the allowable concentration of cadmium impurities contained in solder, regardless of solder types.

Regarding cadmium contained in plastics, the laws of the Netherlands or other countries regulate the cadmium contents or ban its use (without setting any allowable concentrations of cadmium). Therefore, Sony has adopted a principle that it must not be contained, and takes strict controls of cadmium by measuring (or analyzing) its contents.

In the actual measurement, what is considered is the existence of the impurities that cannot be removed, with the existing industrial levels, in a process in which natural ingredients are refined to make raw materials. With the values sought by precise analysis methods such as ICP-AES, a value that is less than 5 ppm is regarded and set as an allowable concentration.

#### **3.2 Lead and lead compounds**

Regarding an allowable concentration of the lead and its compounds contained in plastics, less than 100 ppm is set as a standard. This is a value in which the contents of other metals and the lower detection limit of a measurement device are included. Pre-conditioning for lead and its compounds is the same as that for cadmium. Regarding the lead impurities contained in solder, "less than 1 000 ppm" is set as a standard. This rule will be applied on and after January 1, 2005. The solder that satisfies this condition can be used as lead-free solder. Regarding actual application methods such as management by measuring (or analyzing) lead / lead compound contents, Environment Quality Control, which is specially regulated by Quality Assurance Dept., Procurement Center, must be kept.

#### **3.3 Mercury and mercury compounds**

Regarding mercury and its compounds, allowable contents of mercury are set for small-sized fluorescent lamps and straight-tube fluorescent lamps. What are classified at Level 1 (immediately banned) are a small-sized fluorescent lamp whose mercury content is 10 mg or more and a straight-tube fluorescent lamp whose mercury content is 20 mg or more.

From now on, mercury contents shall gradually be reduced.

#### **3.4 Chlorinated organic compounds**

Mirex is newly added to this category. It is classified at Class 1 in "Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substances (Japanese law)," and whose manufacture, sales, or use is banned. Its purposes are presumed to be those for flame retardants.

Regarding chlorinated paraffins (CP) among chlorinated organic compounds, short-chain chlorinated paraffins (chlorine content: 50% or more) are known to have effects on the environment. Therefore, their purposes are limited; they are classified at Level 1 (immediately banned).

(Refer to SS-00259 AMMENDMENT issued in August of 2002.)

Other purposes are classified at Level 3.

Chlorinated organic compounds except short-chain types are treated as "Other chlorinated organic compounds."

PCB (polychlorinated biphenyls) and PCN (polychlorinated naphthalenes) are classified at Level 1 because they are classified at Class 1 in "Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substances (Japanese law)."

Among the chlorinated organic compounds that are not specified here, ones used for plasticizers or flame retardants are classified at Level 3 because their impacts on the environment are not clear.



### 3.5 Brominated organic compounds

Tetrabromobisphenol-A-bis-(2, 3-dibromopropylether) (Product name: FR-720, etc.) is newly added to this category because laws in the Netherlands ban its manufacture and sales.

By the way, it turned out that PBDE, which was classified as a banned substance in the 1<sup>st</sup> edition, was used for some products. After Sony investigated its effects on the environment and the relevant laws of each country, the following matters have been decided:

- 1) The purposes of PBDE shall be limited.
- 2) PBDE must not be used for new models.
- 3) The use of PBDE shall be phased out.

Thus, a management standard, Level 2, is newly set for brominated organic compounds.

The brominated organic compounds (flame retardants) that are not specified here are classified at Level 3 because their impacts on the environment are not clear.

### 3.6 Organic tin compounds

Tributyl tin compounds and triphenyl tin compounds are classified at Level 1 (Immediately banned) to comply with the revised Sony's Medium-term Environmental Action Program.

### 3.7 Azo compounds

A substance, 4-aminoazobenzene, is added as one of amines that must not be produced by the decomposition of azo compounds. LMBG 82.02.2 to 4, test methods to decompose azo compounds and then to extract amines, are added for reference (LMBG: German Law for Foods and Consumer Products). To carry out these tests is costly and takes time because amines are examined after they are generated by the decomposition of azo compounds. Accordingly, the following matters are recommended:

- 1) Make sure that which color base (C.I. Pigment) is used.
- 2) Obtain information from the manufacturers or organizations that deal in pigments or dyes.

(Information on relevant organizations)

- JAPAN Bulk Pharmaceutical Manufacturers Association

- ETAD: Ecological and Toxicological Association of Dyes and Organic Pigments Manufacturers

\* According to the test results carried out by ETAD, it is said that the azo-organic pigments written in the table below do not interfere with the 5th Amendment of the German Consumer Goods Ordinance.

C.I. Name	C.I. No.	CAS No.	Regulatory status
Pigment Yellow 12	21090	6358-85-6	A
Pigment Yellow 13	21100	5102-83-0	A
Pigment Yellow 14	21095	5468-75-7	A
Pigment Yellow 14	-	7621-06-9	A
Pigment Yellow 17	21105	4531-49-1	A
Pigment Yellow 55	21096	6358-37-8	A
Pigment Yellow 83	21108	5567-15-7	A
Pigment Yellow 126	21101	90268-23-8	A
Pigment Yellow 127	21102	68610-86-6	A
Pigment Yellow 174	21098	78952-72-4	A
Pigment Yellow 176	21103	90268-24-9	A
Pigment Orange 13	21110	3520-72-7	A
Pigment Orange 16	21160	6505-28-8	A
Pigment Orange 34 Pigment Orange 35 Pigment Orange 37	21115	15793-73-4	A

(Note)

C. I.: Color Index

The color indexes for pigments and dyes, published in the U.K.

Regulatory status = A: Exempted under the 5<sup>th</sup> Amendment

### 3.8 Formaldehyde

In the 1<sup>st</sup> edition, only the emission concentration of formaldehyde was determined; accordingly there have been lots of inquiries about how to measure it. When setting regulations against formaldehyde, the relevant laws and industry standards in each country and region were examined again, and finally Chamber method specified in EN 717-1 and Perforator method in EN 120 are adopted as standard measurement methods.

Thus, either one of them shall be applied.

In Japan, the desiccator method specified by JIS standards and JAS ones is adopted. However, it is difficult to clearly correlate Chamber method or Perforator one with the emission quantity of formaldehyde measured by the desiccator method.

E0 materials specified by JIS pass the standards written in this Standard, but confirmation is necessary for E1 materials.

### 3.9 Polyvinyl chloride (PVC) and PVC blends

The resin containing polyvinyl-chloride polymers are used for many parts and devices because of their features such as workability, non-flammability, and low costs. Because it is difficult to know actual conditions on blends with other kinds of resin and on the copolymer products blended with other kinds of polymers, the polyvinyl-chloride blends used in a large quantity (the compounds to which stabilizers, fillers, pigments, or flame retardants are added to commercialize polyvinyl chloride) are classified at Level 2, and then this revision is made.

In this section, homo-type polymers among types of vinyl chloride are regulated; copolymers and graft copolymers are classified at Level 3, because it is difficult to establish substitute technologies for them.

Although the binding ties made of polyvinyl chloride are not specified in Table 4.2, substitute materials have replaced them, and the replacement process is nearly finished, because the large quantity of cadmium has been detected in most of the binding ties.

This SS-00259 regulates neither the use of the unplasticized vinyl chloride materials used for plant facilities and equipment (e.g. a chemical plant) nor the vinyl chloride products (e.g. bolts, nuts, and gaskets) used for these purposes. In addition, because there are no substitute materials that are technically suitable for the above purposes, the above-mentioned vinyl chloride materials and products are not regulated in this Technical Standard.

### 3.10 Regulation over the heavy metals contained in packaging materials

Not only each raw material contained in a packaging material must satisfy each relevant "Management standards for 'The Controlled Substances,'" but also it is necessary to control the four heavy metals contained in each raw material.

A concentration standard of the total amount of four heavy metals is regulated. Regarding plastics, a determined cadmium concentration is less than 5 ppm. Less than 100 ppm is set as a standard value when other heavy metals are included. For example, when a cadmium concentration of a plastic is 4 ppm and the lead concentration is 98 ppm, standards for each metal are satisfied; however the plastic cannot satisfy law requirements because the total concentration of the two metals contained in the plastic is 102 ppm.

In addition, because it is not possible to measure a concentration of hexavalent chromium with the regulated devices, the total amount of chromium shall be measured once. Then, when more than 100 ppm is detected, hexavalent chromium shall be analyzed.

### 3.11 The substances that must not be used when manufacturing parts and devices

The substances that do not fit the purpose of this Standard are those regulated as "Substances that must not be used when parts and devices are manufactured" in the 1<sup>st</sup> edition. In addition, they have different characteristics from those of other substances. Therefore, they are excluded from this edition. Especially, the use of ozone depleting substances (CFC, HCFC, methyl bromide, carbon tetrachloride, and 1, 1, 1-trichloroethane) shall be left in suppliers' hands because the active observance of "Montreal Protocol on Substances that Deplete the Ozone layer" is encouraged, and because observing it reflects a supplier's attitude to society.

In light of "Water Pollution Control Law" and "Industrial Safety and Health Law," both of which are Japanese laws, the following chlorinated organic compounds were written in the 1<sup>st</sup> edition: 1, 1, 2-trichloroethane, 1, 2-dichloroethane, 1, 1-dichloroethane, 1, 2-dichloroethylene, methylene chloride, chloroform, trichloroethylene, and tetrachloroethylene. But these substances do not cover all the ones regulated in each country. Therefore, their use shall be left in suppliers' hands because it is a supplier's responsibility to observe regulations in its own country.

Regarding the above-mentioned two-types of substances, suppliers must follow guiding principles regarding environmental-quality control such as the Green Partner System specially regulated by Quality Assurance Dept., Procurement Center.

The use of these substances shall be referred to suppliers' voluntary control or reduction activities.



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SECURITY GRADE
CLASS C

# SONY TECHNICAL STANDARDS

SS-00259-01

PART 1  
MANAGEMENT STANDARDS FOR THE RESTRICTIVELY-USED  
SUBSTANCES INCLUDED IN PARTS AND DEVICES

ELEVENTH EDITION

ESTABLISHED	2002-03-29
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# SONY

## Security Grade: Class C

The Standards under this security grade shall be applied by and be in the custody of the following parties only:

- (1) Sony Corporation (hereafter called Sony)
- (2) Sony and the associated companies taking responsibility of the whole operations related to Sony brand products.
- (3) The third parties specifically designated by any of the division of Sony or the associated companies.

For the handling of these Standards in cases not specified above, refer to the secretariat of the Sony Technical Standards, Sony Corporation.

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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/threshold levels 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, and packaging components and materials)
- 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
- Printed materials (e.g. instruction manuals, warranty cards, additional product/parts information)
- Repair parts (The application of some repair parts for products on the market shall be followed the instructions on the separately issued notice.)
- Packaging components and materials that parts suppliers use for delivery and protection (See Section 4.2.1 "Definition of packaging components and materials" 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 levels  
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  
Considering possibility of phase-out in the future (i.e. reclassification into Level 2), technical investigations on substances and their applications are conducted.
  - d) Exemption  
Not subject to level 1, level 2 and level 3 because of reasons also being reflected by exemptions from laws. Technical investigations and monitoring of substances and their applications are conducted as necessary.
- 3) Contained  
"Contained" means that a substance remains in parts, devices, or their materials because of addition, filling, blending, or adhesion, whether intended 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) Intentionally added  
"Intentionally added" means a situation where a substance is contained in the part, device, or its materials because of deliberate addition, filling, blending, or adhesion, in order to provide a specific characteristic, appearance, property, attribute or quality.  
Notes: \* A substance that satisfies either or both of the following conditions is treated as impurity and not "Intentionally added":
  - a) One contained in a natural material, which cannot be completely removed in a refining process by adequate technical means (i.e. natural impurities); and
  - b) One generated in a synthesis process, which cannot be completely removed by adequate 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 such as alloy and plastic, they are treated as "Intentionally added."  
\* Dopants (Doping Agents) for production of semiconductor devices, etc. are not treated as "Intentionally added" if present in the devices in a very small amount.
- 5) Target  
"Target" is an object or element (e.g. parts, materials, applications or processing) that might trigger further obligations depending on the defined "management level."
- 6) Criteria/threshold level  
"Criteria/threshold level" is a condition or a numerical value. The use of a controlled substance is prohibited (level 1) or will be prohibited in the future (level 2 & 3) if
  - a) that controlled substance fulfills the condition or
  - b) the concentration of the controlled substance exceeds the specified numerical valueNotes: \* When criteria such as 'Intentionally added' and a numerical value are shown in 'Criteria/threshold levels', both of them shall be satisfied.  
\* If 'test objects' is set for the 'Controlled Substance,' measurements are required in accordance with its 'standard for measurement'
- 7) 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.
- 8) 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.  
Note: \* 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
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)
Polyvinyl chloride (PVC) and PVC blends
Tris(2-chloroethyl) phosphate (TCEP)
Other chlorinated organic compounds
Polybrominated biphenyls (PBB)
Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])
Hexabromocyclododecane (HBCDD)
Other brominated organic compounds
Trisubstituted organotin compounds (including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)
Dibutyltin (DBT) compounds
Dioctyltin (DOT) compounds
Asbestos
Specific azo compounds
Formaldehyde
Specific benzotriazole
Dimethyl fumarate (DMF)
Beryllium oxide
Beryllium copper
Cobalt dichloride
Diarsenic trioxide, Diarsenic pentaoxide
Bis (2-ethylhexyl)phthalate, Dibutyl phthalate, Benzyl butyl phthalate, Diisobutyl phthalate
Di-isononyl phthalate, Di-isodecyl phthalate, Di-n-octyl phthalate, Di-n-hexyl phthalate, "1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich", "1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters", Bis(2-methoxyethyl) phthalate
Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)
Ozone depleting substances (ODS)
Perfluorooctane sulfonates (PFOS)
Boric acid, specific sodium borates
4-(1,1,3,3-tetramethylbutyl) phenol
Bis(2-methoxyethyl) ether
N,N-dimethylacetamide (DMAC)



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**Table 4.2 Main "Targets" and "Effective date of the ban on the delivery" regarding 'Controlled Substances'**

Substances: Cadmium and cadmium compounds			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Plastics (including rubbers) - Paints - Inks	- More than 100 ppm of the cadmium in homogeneous materials (*)	Banned
	- Solders	- More than 20 ppm of the cadmium in solder	
	- All applications other than the above (See 4.2 Additional rules for packaging components and materials. See 4.3 Additional rules for batteries.)	- More than 100 ppm of the cadmium in homogeneous materials	
Exemption	- Plating of electrical contacts, for which high reliability is required and which has no alternative materials - Filter glass		N/A
(*) Test objects: plastics (including rubbers), paints, and inks Threshold level: Up to 100 ppm			
Standards for measurement 1) Sample preparation Typical sample preparation methods: e.g. IEC 62321:2008, EPA 3052:1996 (1) Closed system for acid decomposition method (e.g. microwave decomposition method) (2) Acid digestion method (3) Dry ashing method Note: Precipitates must be completely dissolved by some technical means (e.g. alkali fusion). Any extraction methods (including EN71-3:1994, ASTM F 963-96a, ASTM F 963-03, ASTM D 5517, and ISO 8124-3:1997) shall not be applied. 2) Measurement methods Typical measurement methods: e.g. IEC 62321:2008 (1) Inductively Coupled Plasma-Optical (Atomic) Emission Spectroscopy (ICP-OES [ICP-AES]) (2) Atomic Absorption Spectroscopy (AAS) (3) Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS) Note: If a combination of a sample preparation method and a measurement method can ensure that the limit of quantification for cadmium is less than 5 ppm, the combination is applicable.			

Substances: Lead and lead compounds			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	<ul style="list-style-type: none"> <li>- Plastics (including rubbers)</li> <li>- Paints</li> <li>- Inks</li> </ul> <p>Note: Insulation of wires, cables and cords are defined as plastics (including rubbers).</p>	- More than 100 ppm of the lead in homogeneous materials (*)	Banned
	- Solders	- More than 1000 ppm (or 0.1 wt%) of the lead in solder	
	- Platings (including electroless plating films such as electroless nickel plating and electroless gold plating)	- More than 1000 ppm (or 0.1 wt%) of the lead in plating	
	- Steels	- More than 3500 ppm (or 0.35 wt%) of the lead in steel	
	- Aluminum alloys	- More than 4000 ppm (or 0.4 wt%) of the lead in aluminum alloy	
	- Copper alloys (including brass and phosphor bronze)	- More than 40000 ppm (or 4 wt%) of the lead in copper alloy	
	- Glass of fluorescent tubes	- More than 2000 ppm (or 0.2 wt%) of the lead in glass	
	- All applications other than the above, Level 2 and Level 3 (See 4.2 Additional rules for packaging components and materials. See 4.3 Additional rules for batteries.)	- More than 1000 ppm (or 0.1 wt%) of the lead in homogeneous materials	
Level 3	- Electroless plating films such as electroless nickel plating and electroless gold plating	- Up to 1000 ppm (or 0.1 wt%) of the lead in plating	N/A
Exemption	<ul style="list-style-type: none"> <li>- High melting temperature type solders (i.e. lead based alloys containing 85 wt% by weight or more lead)</li> <li>- Optical glass, filter glass</li> <li>- Glass of cathode ray tubes</li> <li>- Glass, glass matrix compound, ceramic or ceramic matrix compound, which is used in electrical and electronic components (e.g. piezoelectronic devices)</li> </ul> <p>Note that dielectric ceramic in capacitors is excluded.</p> <ul style="list-style-type: none"> <li>- Dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher</li> <li>- Solder to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages</li> </ul>		N/A



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Substances: Lead and lead compounds	
(*) Test objects: plastics (including rubbers), paints, and inks Threshold level: Up to 100 ppm	
Standards for measurement	
1) Sample preparation	
Typical sample preparation methods: e.g. IEC 62321:2008, EPA 3052:1996	
(1) Closed system for acid decomposition method (e.g. microwave decomposition method)	
(2) Acid digestion method	
(3) Dry ashing method	
Note: Precipitates must be completely dissolved by some technical means (e.g. alkali fusion). Any extraction methods (including EN71-3:1994, ASTM F 963-96a, ASTM F 963-03, ASTM D 5517, and ISO 8124-3:1997) shall not be applied. Additionally, EN1122:2001 is not applicable for lead.	
2) Measurement methods	
Typical measurement methods: e.g. IEC 62321:2008	
(1) Inductively Coupled Plasma-Optical (Atomic) Emission Spectroscopy (ICP-OES [ICP-AES])	
(2) Atomic Absorption Spectroscopy (AAS)	
(3) Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	
Note: If a combination of a sample preparation method and a measurement method can ensure that the limit of quantification for lead is less than 30 ppm, the combination is applicable.	

**Table 4.2a Allowable lead concentrations**

Type of alloy	Allowable lead concentration
Steel	up to 3500 ppm (or 0.35 wt%)
Aluminum alloy	up to 4000 ppm (or 0.4 wt%)
Copper alloys (including brass and phosphor bronze)	up to 40000 ppm (or 4 wt%)
Solder	up to 1000 ppm (or 0.1 wt%)

Note: A solder whose lead content is equal to or less than the threshold level of solder shown in "Criteria/threshold levels" shall be used if it is used for anisotropic conductive film (ACF) and anisotropic conductive paste (ACP) as a conductive material.

Substances: Mercury and mercury compounds			
Targets		Criteria/threshold levels (*)	Effective date of the ban on the delivery
Level 1	<ul style="list-style-type: none"> <li>- All applications (See 4.2 Additional rules for packaging components and materials. See 4.3 Additional rules for batteries.)</li> </ul>	<ul style="list-style-type: none"> <li>- Intentionally added</li> <li>- More than 1000 ppm (or 0.1 wt%) of the mercury in the homogeneous materials</li> </ul>	Banned
Exemption	<ul style="list-style-type: none"> <li>- Mercury in cold cathode fluorescent lamps (CCFL) and external electrode fluorescent lamps (EEFL): Short length (not over 500 mm): Less than 3.5 mg of mercury per lamp Medium length (over 500 mm and not over 1500 mm): Less than 5 mg of mercury per lamp Long length (over 1500 mm): Less than 13 mg of mercury per lamp</li> <li>- Mercury in high-pressure gas discharge lamps (e.g. projector lamps)</li> </ul>		N/A

\* When "Intentionally added" and a numerical value are shown in "Criteria/threshold levels", both of them shall be satisfied.

Substances: Hexavalent chromium compounds			
Targets		Criteria/threshold levels (*)	Effective date of the ban on the delivery
Level 1	<ul style="list-style-type: none"> <li>- Surfaces of screws, steel sheets, etc. that are processed with plating or conversion coating</li> </ul>	<ul style="list-style-type: none"> <li>- Residue on the processed surface (**)</li> </ul>	Banned
	<ul style="list-style-type: none"> <li>- All applications other than the above (See 4.2 Additional rules for packaging components and materials. See 4.3 Additional rules for batteries.)</li> </ul>	<ul style="list-style-type: none"> <li>- Intentionally added</li> <li>- More than 1000 ppm (or 0.1 wt%) of the hexavalent chromium in the homogeneous materials</li> </ul>	

\* When "Intentionally added" and a numerical value are shown in "Criteria/threshold levels", both of them shall be satisfied.

\*\* Residue on the processed surface is banned in Level 1. Not applicable to hexavalent chromium compounds for surface processing.



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Substances: Polychlorinated biphenyls (PCB), polychlorinated naphthalenes (PCN), polychlorinated terphenyls (PCT)			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added	Banned

Substances: Short-chain chlorinated paraffins (SCCP)			
Short-chain chlorinated paraffins with carbon chain length;10-13			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All uses	- More than 1000 ppm (or 0.1 wt%) of the materials	Banned

Substances: Polyvinyl chloride (PVC) and PVC blends			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Substrates for FeliCa contactless IC cards	- Intentionally added	Banned
	- Fabrics and coating agents used for carrying bags, carrying cases, and carrying pouches for the following products (excluding those for professional use):		
	- Personal computers, digital cameras, video camcorders, and portable audio products		
	- Cable ties used for accessories and connecting cords		
	- Packaging components and materials to protect, contain, or transport products or supplied accessories (e.g. bags, adhesive tapes, cartons, and blister packs)		
	- Heat shrink tubes		
	- Flexible flat cables (FFC)		
	- Sheets and laminates used for exterior of wooden speakers		
	- Insulating plates, decorative panels, labels, sheets, and laminates		
	- Suction cups for mounting in-vehicle products		

Substances: Polyvinyl chloride (PVC) and PVC blends			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	<ul style="list-style-type: none"> <li>- Cords for wearable equipment (e.g. cords for ear phones, head phones, and ear microphones)</li> <li>- Coating for insulation and protection used for the inside or outside of devices, insulating tubes, carrying belts, spacers, holders, covers, ducts, etc.</li> <li>- Power supply cords (including ones with some or all of the following: plugs, connectors, or cord bushes) designed for use in Japan, the U.S., and Canada (2P and 3P)</li> <li>- Parts consisting of wires (e.g. connectors with cords) and wires used for internal wiring (e.g. motor leads)</li> <li>- Connection cords (e.g. USB cables, i.LINK cables, AV cables, antenna cables, cords with DC plug of AC adaptors, flat wires, multi core cables, speaker cords, etc.)</li> <li>- Harnesses and processing wires (e.g. coaxial cables, flat wires, double insulation wires, and shielded wires)</li> <li>- Fabrics and coating agents used for the carrying bags, carrying cases, and carrying pouches, which are designed for exclusive use with professional-electronics products</li> <li>- Insulation caps for capacitors, power supply switches, and fuses</li> <li>- Packaging components or materials for devices, semiconductors, and any other components (e.g. trays, magazine sticks, stoppers, reels, embossed carrier tapes)</li> <li>- Wiring clip used for the inside of devices (made of polyvinyl chloride-coated metal)</li> </ul> <p>Other parts except those classified into Level 1</p>	<ul style="list-style-type: none"> <li>- More than 1000 ppm (or 0.1 wt%) of the parts</li> </ul>	N/A
Exemption	<ul style="list-style-type: none"> <li>- Binder for resins</li> <li>- Polyvinyl electrical wires for high voltage</li> <li>- Insulating tapes</li> <li>- Speaker grilles</li> <li>- Power supply cords designed for use in countries and regions other than Japan, the U.S., and Canada</li> <li>- Parts that are not classified into Levels 1 and 3, and are composed of vinyl chloride copolymers or blends of PVC and other polymers</li> <li>- Transformer leads whose joint is fixed by varnish impregnation</li> <li>- Curl cords</li> <li>- Extra fine electrical wires that are AWG (American Wire Gauge) 36 or more</li> <li>- Professional cables for which general-purpose ones cannot be substituted (e.g. cables for broadcast cameras and microphone cables)</li> </ul>		N/A



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Substances: Tris(2-chloroethyl) phosphate (TCEP)			
CAS No. 115-96-8			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 2	- Flame retardants used in plastics, resins, fabrics, and textiles	- More than 1000 ppm (or 0.1 wt%) of the parts	July 1, 2014

Substances: Other chlorinated organic compounds			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	- Flame retardants used for printed wiring board laminate	- More than 900 ppm (0.09%) chlorine content by weight in the laminate	N/A
	- Flame retardants or plasticizers contained in plastic parts other than the above	- Intentionally added	

Substances: Polybrominated biphenyls (PBB)			
Targets		Criteria/threshold levels (*)	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added - More than 1000 ppm (or 0.1 wt%) in the homogeneous materials	Banned

\* When "Intentionally added" and a numerical value are shown in "Criteria/threshold levels", both of them shall be satisfied.

Substances: Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])			
Targets		Criteria/threshold levels (*)	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added - More than 1000 ppm (or 0.1 wt%) in the homogeneous materials	Banned

\* When "Intentionally added" and a numerical value are shown in "Criteria/threshold levels", both of them shall be satisfied.

Substances: Hexabromocyclododecane (HBCDD)			
CAS No. 25637-99-4, 3194-55-6, 134237-50-6, 134237-51-7, 134237-52-8			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 2	- Flame retardants used in plastics and resins	- More than 1000 ppm (or 0.1 wt%) in the parts	January 1, 2015

Substances: Other brominated organic compounds			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	- Flame retardants used for printed wiring board laminate	- More than 900 ppm (0.09%) bromine content by weight in the laminate	N/A
	- Flame retardants or plasticizers contained in plastic parts other than the above	- Intentionally added	

Substances: Trisubstituted organotin compounds (including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)			
Metal tin, tin alloys, tin plating and tin inorganic compounds do not fall under this category.			
Targets		Criteria/threshold levels (*)	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added - More than 1000 ppm (or 0.1 wt%) of the tin contained in materials	Banned

\* When "Intentionally added" and a numerical value are shown in "Criteria/threshold levels", both of them shall be satisfied.

Substances: Dibutyltin (DBT) compounds			
Metal tin, tin alloys, tin plating and tin inorganic compounds do not fall under this category.			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All applications including additives of plastics (except Level 2 below)	- More than 1000 ppm (or 0.1 wt%) of the tin contained in materials	Banned
Level 2	- One-component and two-component room temperature vulcanisation sealants (RTV-1 and RTV-2 sealants) - One-component and two-component room temperature vulcanisation adhesives (RTV-1 and RTV-2 adhesives) - Catalysts for paints or coating agents - Stabilizers in PVC used for coating of fabrics intended for outdoor applications - Additives of soft polyvinyl chloride (PVC) profiles whether by themselves or coextruded with hard PVC	- More than 1000 ppm (or 0.1 wt%) of the tin contained in materials	July 1, 2014
Exemption	- Additives of reused packaging components and materials for parts and devices - Additives of packaging components or materials for devices, semiconductors, and any other components (e.g. trays, magazine sticks, stoppers, reels, embossed carrier tapes)		N/A

Substances: Dioctyltin (DOT) compounds			
Metal tin, tin alloys, tin plating and tin inorganic compounds do not fall under this category.			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Additives of textiles	- More than 1000 ppm (or 0.1 wt%) of the tin contained in materials	Banned

Substances: Asbestos			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added	Banned



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Substances: Specific azo compounds			
Azodyes that form any of the amine compounds listed in Table 4.2b through the decomposition methods cited in REACH Regulation (EC) No. 1907/2006 / Annex XVII and amine compounds in Table 4.2b			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Additives of textiles and leathers	- More than 30 ppm (or 0.003 wt%) in textiles and leathers	Banned
Testing methods (for reference) The methods for decomposing azo compounds and then extracting amines are as follows.			
1) EN 14362-1:2003			
2) CEN ISO/TS 17234:2003			
3) EN 14362-2:2003			

**Table 4.2b 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; 4-chloro-2-methylaniline
91-59-8	2-naphthylamine
97-56-3	o-aminoazotoluene
99-55-8	2-amino-4-nitrotoluene; 5-nitro-o-toluidine
106-47-8	p-chloroaniline
615-05-4	2,4-diaminoanisole
101-77-9	4,4'-diaminodiphenylmethane; 4,4'-methylenedianiline
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; 4,4'-diamino-3,3'-diphenylmethane
120-71-8	p-cresidine; 6-methoxy-m-toluidine
101-14-4	4,4'-methylene-bis-(2-chloroaniline)
101-80-4	4,4'-oxideaniline
139-65-1	4,4'-thiodianiline; 4,4'-diaminodiphenylsulfide
95-53-4	o-toluidine
95-80-7	2,4-toluylenediamine; 4-methyl-m-phenylenediamine
137-17-7	2,4,5-trimethylaniline
90-04-0	o-anisidine
60-09-3	4-aminoazobenzene

Substances: Formaldehyde			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products (e.g. speakers and racks)	- The details are as follows.	Banned
Threshold level (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 <sup>3</sup> ) in an air-tight test chamber whose volume is 12 m <sup>3</sup> , 1 m <sup>3</sup> , or 0.0225 m <sup>3</sup> 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.)			
Testing methods: - A chamber method specified in EN 717-1:2004 - A perforator method specified in EN 120:1992 - A desiccator method specified in JIS A 5905 (Fiberboards) and JIS A 5908 (Particleboards)			

Substances: Specific benzotriazole			
2-(3',5'-Di-tert-butyl-2'-hydroxyphenyl)benzotriazole (CAS No. 3846-71-7)			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	Ultraviolet protectants and ultraviolet absorbers applied to decorative laminate, developing papers, molded plastic parts, lenses and frames of eyeglasses	- Intentionally added	Banned

Substances: Dimethyl fumarate (DMF)			
CAS No. 624-49-7			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All uses	- More than 0.1 ppm of the materials	Banned

Substances: Beryllium oxide			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added	Banned

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

Substances: Cobalt dichloride			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Moisture indicator used for a desiccant agent (e.g. silica gel) - Humidity indicator card which is impregnated with cobalt dichloride	- Intentionally added	Banned



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Substances: Diarsenic trioxide, Diarsenic pentaoxide			
The target substances are as follows: CAS No. 1303-28-2, 1327-53-3. The following threshold level for each substance shall be applied.			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 2	- Antifoam agents or fining agents for LCD panels (including cover glasses, touchscreens, and backlights)	- More than 1000 ppm (or 0.1 wt%) of the parts	July 1, 2014

Substances: Bis (2-ethylhexyl)phthalate, Dibutyl phthalate, Benzyl butyl phthalate, Diisobutyl phthalate			
The target substances are as follows: CAS No. 117-81-7, 84-74-2, 85-68-7, 84-69-5 (Refer to Table 4.2c). The following threshold level for each substance shall be applied.			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 2	- Plasticizers used for cables and cords (including plugs and connectors)	- More than 1000 ppm (or 0.1 wt%) of the parts	July 1, 2014
Level 3	- All uses other than the above	- More than 1000 ppm (or 0.1 wt%) of the parts	N/A

Substances: Di-isononyl phthalate, Di-isodecyl phthalate, Di-n-octyl phthalate, Di-n-hexyl phthalate, "1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich", "1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters", Bis(2-methoxyethyl) phthalate			
CAS No. 28553-12-0, 68515-48-0, 26761-40-0, 68515-49-1, 117-84-0, 84-75-3, 71888-89-6, 68515-42-4, 117-82-8 (refer to Table 4.2c). The following threshold level for each substance shall be applied.			
Targets			Effective date of the ban on the delivery
Level 3	- All uses	- More than 1000 ppm (or 0.1 wt%) of the parts	N/A

**Table 4.2c List of specific phthalates (phthalic esters)**

Abbreviation	CAS No.	Name
DEHP	117-81-7	Bis (2-ethylhexyl)phthalate; Di (2-ethylhexyl) phthalate
DBP	84-74-2	Dibutyl phthalate; Di-n-butyl phthalate
BBP	85-68-7	Benzyl butyl phthalate; Butyl benzyl phthalate
DIBP	84-69-5	Diisobutyl phthalate; Di-i-butyl phthalate
DINP	28553-12-0 68515-48-0	Di-isononyl phthalate; Diisononyl phthalate
DIDP	26761-40-0 68515-49-1	Di-isodecyl phthalate; Diisodecyl phthalate
DNOP	117-84-0	Di-n-octyl phthalate
DNHP	84-75-3	Di-n-hexyl phthalate
DIHP	71888-89-6	1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich
DHNUP	68515-42-4	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters
DMEP	117-82-8	Bis(2-methoxyethyl) phthalate

Substances: Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Uses installed into product (e.g. refrigerant and insulation)	- Intentionally added	Banned

Substances: Ozone depleting substances (ODS)			
ODS in Table 4.2d			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- Uses for refrigerant, insulation and other products	- Intentionally added	Banned
	- All uses	- Treatments such as cleaning and foaming	

**Table 4.2d List of ozone depleting substances (ODS)**

CAS No.	Name
75-69-4	CFC-11; trichlorofluoromethane
75-71-8	CFC-12; dichlorofluoromethane
76-13-1	CFC-113; trichlorofluoroethane
76-14-2	CFC-114; dichlorotetrafluoroethane
76-15-3	CFC-115; chloropentafluoroethane
353-59-3	Halon-1211; bromochlorodifluoromethane
75-63-8	Halon-1301; bromotrifluoromethane
124-73-2	Halon-2402; dibromotetrafluoroethane
75-72-9	CFC-13; chlorotrifluoromethane
354-56-3	CFC-111; pentachlorofluoroethane
76-12-0	CFC-112; tetrachlorodifluoroethane
422-78-6	CFC-211; heptachlorofluoropropane
3182-26-1	CFC-212; hexachlorodifluoropropane
2354-06-5	CFC-213; pentachlorotrifluoropropane
29255-31-0	CFC-214; tetrachlorotetrafluoropropane
4259-43-2	CFC-215; trichloropentafluoropropane
661-97-2	CFC-216; dichlorohexafluoropropane
422-86-6	CFC-217; chloroheptafluoropropane
56-23-5	Carbon tetrachloride; tetrachloromethane
71-55-6	1,1,1-Trichloroethane; methyl chloroform

Substances: Perfluorooctane sulfonates (PFOS)			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 1	- All uses	- Intentionally added	Banned
Exemption	- Photographic films for professional use - Resists for semiconductors		N/A



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Substances: Boric acid, specific sodium borates			
Boric acid, specific sodium borates listed in Table 4.2e			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	- All uses	- More than 1000 ppm (or 0.1 wt%) of the parts	N/A

**Table 4.2e List of boric acids and specified sodium borates**

CAS No.	Name
10043-35-3	Boric acid
11113-50-1	Boric acid
12179-04-3	Disodium tetraborate, anhydrous; Tetraboron disodium heptaoxide pentahydrate
1330-43-4	Disodium tetraborate, anhydrous; Tetraboron disodium heptaoxide
1303-96-4	Disodium tetraborate, anhydrous; Disodium tetraborate decahydrate; Borax
12267-73-1	Tetraboron disodium heptaoxide, hydrate

Substances: 4-(1,1,3,3-tetramethylbutyl) phenol			
Synonym: 4-tert-Octylphenol, CAS No. 140-66-9			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	- All uses	- More than 1000 ppm (or 0.1 wt%) of the parts	N/A

Substances: Bis(2-methoxyethyl) ether			
CAS No. 111-96-6			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	- All uses	- More than 1000 ppm (or 0.1 wt%) of the parts	N/A

Substances: N,N-dimethylacetamide (DMAC)			
CAS No. 127-19-5			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Level 3	- All uses	- More than 1000 ppm (or 0.1 wt%) of the parts	N/A

## 4.2 Additional rules for packaging components and materials

### 4.2.1 Definition of "packaging components and materials"

Packaging components and materials are defined as products made from any materials and components 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 components and materials for the returnable boxes, which are reused or recycled under the control of carriers or parts suppliers, and are not disposed of by end-users or Sony.

**Table 4.3 Additional rules for packaging components and materials**

Substances: Heavy metals (cadmium, lead, mercury, and hexavalent chromium)		
Articles that satisfy not only the rules specified in Table 4.2, but also the following conditions determined by the regulations of relevant laws		
Targets		Effective date of the ban on the delivery
Level 1	- All packaging components and materials Some examples are given in PACKAGING of Table 4.3a.	Banned
Exemption	- Cartons for returnable boxes owned by carriers or parts suppliers	N/A
Threshold levels		
- "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. (Typical plastic parts: handles, cushions, films, reels, adhesive tapes, magazine sticks [including stoppers], polyvinyl bags, bands, and trays)		
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 in Table 4.3.		
Standards for four heavy metals measurement		
1) Sample preparation For cadmium and lead, follow the methods respectively specified in Table 4.2 (*1) (*2). For total chromium, follow the methods specified in Table 4.2 (*1). For mercury, typical methods are as follows. (1) Closed system for acid decomposition method (e.g. a microwave decomposition method) (e.g. IEC 62321:2008, EPA 3052:1996) (2) A heating evaporation-cold-vapor mercury-atomic-absorption method (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 in Table 4.2 (*1) (*2). Regarding the measurement of mercury concentrations, follow the same methods as cadmium and lead specified in Table 4.2 (*1) (*2). 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-OES (ICP-AES) method with a hydride-generation apparatus (3) ICP-MS method with a hydride-generation apparatus		



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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 components and materials is 100 ppm or more.

Detection methods:

- 1) Sample preparation
  - Extraction methods such as boiling water extraction and alkaline extraction (e.g. IEC 62321:2008 Annex C, EPA 3060A)
- 2) Measurement method
  - Ultraviolet-Visible (UV/VIS) Spectroscopy (e.g. IEC 62321:2008 Annex C, EPA 7196A)
- If a combination of a sample preparation method and a measurement method can ensure 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
  - (4) Less than 30 ppm for lead

(\*1) Refer to "Test objects: plastics (including rubbers), paints, and inks," "Substances: Cadmium and cadmium compounds," in Table 4.2 "Main "Targets" and "Effective date of the ban on the delivery" regarding 'Controlled Substances.'"

(\*2) Refer to "Test objects: plastics (including rubbers), paints, and inks," "Substances: Lead and lead compounds," in Table 4.2 "Main "Targets" and "Effective date of the ban on the delivery" regarding 'Controlled Substances.'"

**Table 4.3a Illustrative examples of PACKAGING components/materials and NOT PACKAGING components/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 components
11.	Adhesive tape	Such as used for closing carton or poly bag, or, fixing or protection for removable component
12.	Staple	
13.	Label	Attached to the packaging components 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	
24.	Spindle case	
NOT PACKAGING		
1.	Case/Bag	Cases or bags intended to be used as storage for CD, DVD, Blu-ray Discs, MD, tapes or MO devices
2.	Inlay card, inlay label	Such as index-card or label for CD and other recording media which are defined as part of product
3.	Carrying case, carrying pouch	Such as used for headphones, camera, and walkman®, which are defined as part of product
4.	Label	Labels attached to products and others except those attached to packaging components and materials
5.	Label	Labels attached 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	



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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, adhesive 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 Additional rules for batteries (Applicable to all batteries in commercial distribution)

#### 4.3.1 Definitions of "Battery," "Battery pack," and "Button cell" in this Technical Standard

"Battery" means any source of electrical energy generated by direct conversion of chemical energy and consisting of one or more primary battery cells (non-rechargeable) or consisting of one or more secondary battery cells (rechargeable).

"Battery Pack" means any set of batteries that are connected together and/or encapsulated within an outer casing so as to form a complete unit that the end-user is not intended to split up or open.

"Button Cell" means any small round portable battery whose diameter is greater than its height and which is used for special purposes such as hearing aids, watches, small portable equipment and back-up power.

Battery cells used for "Battery packs" shall be compliant with the rules specified in Table 4.4, because they are identified as "Battery."

For "Battery packs", parts which constitute except the cell follow the standards specified in Section 4.1 and 4.2 also. The cells must comply with the rules specified in table 4.4.

**Table 4.4 Rules for batteries**

Substances: Heavy metals (cadmium, lead, and mercury)			
		Targets	Effective date of the ban on the delivery
Level 1	Cd	- NiCd rechargeable batteries	Banned
		- "Batteries" whose cadmium content, in proportion to their weight, is 0.002% or more	
		- "Battery packs" whose cadmium content, in any of their cells, is 0.002% or more	
		- Zinc carbon batteries, alkaline batteries, and a nickel hydrogen (nickel-MH) rechargeable batteries whose cadmium content, in proportion to their weight, is 0.001% or more.	
	Pb	- "Batteries" whose lead content, in proportion to their weight of each one, is 0.4% or more	
		- "Battery packs" whose lead content, in any of their cells, is 0.4% or more	
		- Zinc carbon batteries and alkaline button cells whose lead content, in proportion to their weight, is 0.1% or more	
	Hg	- Alkaline batteries (except button cells) whose lead content, in proportion to their weight, is 0.004% or more	
		- Button cells whose mercury content, in proportion to their weight, is 2% or more	
		- The following "batteries" and "battery packs" except button cells "Batteries" whose mercury content, in proportion to their weight, is 0.0005% or more "Battery packs" whose mercury content, in any of their cells, is 0.0005% or more	
	- Zinc carbon batteries and alkaline batteries and nickel hydrogen (NiMH) rechargeable batteries whose mercury content, in proportion to their weight, is 0.0001% or more		



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## 5. REPLACEMENT OF CHEMICAL SUBSTANCES CONTAINED IN PARTS OF SPECIFIC PRODUCT CATEGORIES

Sony declares in "Sony Group Environmental Mid-Term Target" that:

Sony analyzes the use of chemical substances and the contents in parts and products.

Based on the risk evaluation, Sony identifies and discontinues high-risk uses of these substances.

### Polyvinyl chloride (PVC)

PVC may pose a risk to the environment if disposed of improperly. Another concern is that PVC might contain various other chemical substances, including plasticizers and stabilizers, which could pose risks to the environment and human health.

Sony is concerned with the possibility that in particular its small electronics products in developing countries could be collected for obtaining valuable materials, and then the unwanted parts could be improperly incinerated and disposed of in landfills. Considering the impact of these activities on the environment, Sony will replace PVC with alternative substances for the product categories or models as listed at below web site link.

### Brominated Flame Retardants (BFR)

Some BFRs are harmful to human health and tend to remain in the environment and accumulate in living organisms. As in the case of PVC, improper incineration of BFRs carries a risk of releasing harmful substances into the environment. Considering the impact of these activities on the environment, Sony will replace BFR with alternative substances for the product categories or models as listed at below web site link.

Parts to be replaced: A product specified at below web site link and newly released at least after April 1st, 2011:

<http://www.sony.net/SonyInfo/csr/environment/chemical/products/index.html#hyo>

(This does not apply to accessories and products designed for professional use.)

Parts including PVC to be replaced: casing and cables for internal wiring (intentional use of Polyvinyl chloride (PVC) and PVC blends)

Parts including BFR to be replaced: Resins of casing (concentration of BFR is more than 1000 ppm) and main printed wiring boards (PWB) (concentration of bromine (Br) is more than 900 ppm)

Note: This does not apply to items in "exemption" in "Polyvinyl chloride (PVC) and PVC blends". This except in cases where doing so would negatively affect product quality or cause technical problems.

**Detailed instructions should be given to business partners separately with the specifications of the parts used for target products.**

**6. EXCHANGE OF SPECIFICATIONS REGARDING THE ENVIRONMENT-RELATED SUBSTANCES TO BE CONTROLLED WITH BUSINESS PARTNERS**

**Either the sentence, "This part should not contain any substances which are specified in SS-00259-01," or one that conveys the same meaning must clearly be written on the drawings or specifications for parts and materials that are lent out to suppliers by Sony.**

Regarding the threshold levels regulated in this Standard, suppliers must comprehend and control them with adequate methods. For the targets classified into Level 1 for which strict controls are needed to follow relevant laws and regulations, suppliers must prove that the threshold levels of the Level 1 substances meet those required in this Standard by applying the measurement methods where specified. **Suppliers must have control over concrete methods for the proof by following the detailed regulations for operation that are separately regulated by the procurement divisions of Sony.**



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## **APPENDIX**

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

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

- 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)
- Trisubstituted organotin compounds  
(including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)
- Dibutyltin (DBT) compounds
- Dioctyltin (DOT) compounds
- Asbestos
- Formaldehyde
- Polyvinyl chloride (PVC) and PVC blends
- Beryllium oxide
- Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)
- Perfluorooctane sulfonates (PFOS)
- Specific benzotriazole
- Cobalt dichloride
- Dimethyl fumarate (DMF)

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.

### **3. HISTORY OF UPDATES ON EFFECTIVE DATE OF THE BAN ON THE DELIVERY FOR EVERY SUBSTANCE**

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

Note: This information is confirmed as of January 2012. The revised edition and appendix should be also referred if there are.

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 (examples)
Cadmium and cadmium compounds	European Union. REACH Regulation (EC) No. 1907/2006.
	European Union. RoHS Directive 2002/95/EC.
	European Union. Batteries Directive 2006/66/EC.
	South Korea. Quality Management and Safety Control of Industrial Products Act
	Denmark: Statutory Order No. 1199.
Lead and lead compounds	European Union. RoHS Directive 2002/95/EC.
	European Union. Batteries Directive 2006/66/EC.
	Argentina. The Law No..26.184 Portable Power and Resolution 14/2007.
	Brazil. Battery Regulation (Resolution No. 401)
	South Korea. Quality Management and Safety Control of Industrial Products Act
	Denmark: Statutory Order No. 1012.
Mercury and mercury compounds	European Union. RoHS Directive 2002/95/EC.
	European Union. Batteries Directive 2006/66/EC.
	China. 1997 Regulation on Mercury Content Limitation for Batteries.
	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.
Polychlorinated biphenyls (PCB)	European Union. REACH Regulation (EC) No. 1907/2006.
Polychlorinated naphthalenes (PCN)	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class I.
Polychlorinated terphenyls (PCT)	
Short-chain chlorinated paraffins (SCCP)	Norway. Regulations relating to restrictions on the use, etc. of certain dangerous chemicals.
Tris(2-chloroethyl) phosphate (TCEP)	European Union. REACH Regulation (EC) No. 1907/2006.
Polybrominated biphenyls (PBB)	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
	European Union. RoHS Directive 2002/95/EC.
Polybrominated diphenylethers (PBDE)	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
	European Union. RoHS Directive 2002/95/EC
Hexabromocyclododecane (HBCDD)	European Union. REACH Regulation (EC) No. 1907/2006.
Trisubstituted organic tin compounds (incl. tributyltin (TBT) compounds and triphenyltin (TPT) compounds )	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class I and Class II.
Dibutyltin (DBT) compounds	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
Dioctyltin (DOT) compounds	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
Asbestos	Japan. Industrial Safety and Health Law.
	Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV)
Specific azo compounds	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
Formaldehyde	Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV)
	Denmark: Statutory Order No. 289.
Beryllium oxide	European Union. WEEE Directive 2002/96/EC and EU Directive 1999/45/EC.



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Substances	Laws and regulations (examples)
Bis (2-ethylhexyl)phthalate, Dibutyl phthalate, Benzyl butyl phthalate, Diisobutyl phthalate	European Union. REACH Regulation (EC) No. 1907/2006.
Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)	European Union. EU regulation (EC) No. 842/2006.
	Denmark: Statutory Order No. 552.
	Switzerland. Ordinance on Risk Reduction related to Chemical Products (ORRChem).
Perfluorooctane sulfonates (PFOS)	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
Specific benzotriazole	Japan. Law Concerning the Examination and Regulation of Manufacture of Chemical Substances, Class I.
Cobalt dichloride	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
Ozone depleting substances (ODS)	European Union. EU regulation (EC) No. 2037/2000.
	Japan. Law Concerning the Protection of the Ozone Layer through the Control of Specified Substances and Other Measures.
	United States. Clean Air Act Amendments of 1990.
	Republic of Indonesia. Regulation of the Minister of Industry of the Republic of Indonesia No. 33/M-IND/PER/4/2007 dated April 17, 2007.
Dimethyl fumarate (DMF)	European Union. REACH Regulation (EC) No. 1907/2006.
Diarsenic trioxide, Diarsenic pentaoxide	European Union. REACH Regulation (EC) No. 1907/2006.
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

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
Cadmium	7440-43-9	Cd
Cadmium alloys		
Cadmium oxide	1306-19-0	CdO
Cadmium chloride	10108-64-2	CdCl <sub>2</sub>
Cadmium sulfide	1306-23-6; 8048-07-5	CdS
Cadmium nitrate	10325-94-7	Cd(NO <sub>3</sub> ) <sub>2</sub>
Cadmium nitrate tetrahydrate	10022-68-1	Cd(NO <sub>3</sub> ) <sub>2</sub> · 4H <sub>2</sub> O
Cadmium sulfate	10124-36-4	CdSO <sub>4</sub>
Cadmium stearate	2223-93-0	Cd(C <sub>18</sub> H <sub>35</sub> O <sub>2</sub> ) <sub>2</sub>
Other cadmium compounds and alloys		

## &lt;2&gt; Major applications

- Contact materials and additives for electrical contact points including DC motors, switches, relays and breakers
- Surface treatment (e.g. electroplating, electroless plating, etc.)
- Materials for battery including Nickel-Cadmium batteries, cadmium batteries, and Alkaline batteries
- Solder, low melting point solder
- Reagents, raw materials for chemical synthesis
- Plating bath, plating brighteners
- Polyvinyl chloride stabilizers
- Pigments, semiconductor light receiving elements, paint, coating, inks and coloring agents
- Stabilizers used for plastics (including rubber) materials
- Pigments and dyes (including insulators of electrical wiring, keys of remote commanders, cable ties, outer plastic resins of electrical parts, cabinets, labels, phonograph records)
- Photographic materials, photographic films
- Fluorescent lamps (small-sized ones, straight-tube ones)
- Fuses (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)
- CdS-photocells and the phosphors contained in fluorescent display devices
- Resistor elements (glass frit)
- Impurities in metals containing zinc (brass, hot dip galvanizing, etc.)
- Additives for optical glass



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● Lead and lead compounds

<1> Examples

Name	CAS No.	Chemical formula
Lead; metal	7439-92-1	Pb
Lead -tin alloy		Pb-Sn
Lead (II) oxide	1317-36-8	PbO
Lead (IV) oxide	1309-60-0	PbO <sub>2</sub>
Dilead trioxide	1314-27-8	Pb <sub>2</sub> O <sub>3</sub>
Lead (II, IV) oxide	1314-41-6	Pb <sub>3</sub> O <sub>4</sub>
Lead diazide: Lead azide	13424-46-9	PbN <sub>6</sub>
Lead (II) fluoride	7783-46-2	PbF <sub>2</sub>
Lead (II) chloride	7758-95-4	PbCl <sub>2</sub>
Lead (IV) chloride	13463-30-4	PbCl <sub>4</sub>
Lead (II) iodide	10101-63-0	PbI <sub>2</sub>
Lead (II) sulfide	1314-87-0	PbS
Lead (II) cyanide	592-05-2	Pb(CN) <sub>2</sub>
Lead tetra fluoroborate	13814-96-5	Pb(BF <sub>4</sub> ) <sub>2</sub>
Lead hexa fluorosilicate	25808-74-6	PbSiF <sub>6</sub>
Lead nitrate	10099-74-8	Pb(NO <sub>3</sub> ) <sub>2</sub>
Lead carbonate	598-63-0	PbCO <sub>3</sub>
Lead hydroxycarbonate	1344-36-1	(PbCO <sub>3</sub> ) <sub>2</sub> Pb(OH) <sub>2</sub>
Lead perchlorate	13637-76-8	Pb(ClO <sub>4</sub> ) <sub>2</sub>
Lead (II) sulfate	7446-14-2; 15739-80-7	PbSO <sub>4</sub>
Lead oxide sulfate	12202-17-4	Pb <sub>4</sub> SO <sub>7</sub>
Lead (II) phosphate	7446-27-7	Pb <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>
Lead thiocyanate	592-87-0	Pb(SCN) <sub>2</sub>
Lead (II) acetate, trihydrate	6080-56-4	Pb(CH <sub>3</sub> COO) <sub>2</sub> · 3H <sub>2</sub> O
Lead (II) acetate	301-04-2	Pb(CH <sub>3</sub> COO) <sub>2</sub>
Lead (IV) acetate	546-67-8	Pb(CH <sub>3</sub> COO) <sub>4</sub>
Lead oleate	1120-46-3	Pb[CH <sub>3</sub> (CH <sub>2</sub> ) <sub>7</sub> CH=CH(CH <sub>2</sub> ) <sub>7</sub> COO] <sub>2</sub>
Lead stearate	7428-48-0	Pb(C <sub>17</sub> H <sub>35</sub> COO).xPb (x ≥ 1)
Lead (II) metaborate	10214-39-8	Pb(BO <sub>2</sub> ) <sub>2</sub> · H <sub>2</sub> O
Lead metasilicate	11120-22-2; 10099-76-0	PbSiO <sub>3</sub>

Name	CAS No.	Chemical formula
Lead antimonite	13510-89-9	$\text{Pb}_3(\text{SbO}_4)_2$
Lead hydrogen arsenate	7784-40-9	$\text{PbHAsO}_4$
Lead (II) arsenite	10031-13-7	$\text{Pb}(\text{AsO}_2)_2$
Lead chromate; chrome yellow; lead sulfochromate yellow; C.I. Pigment Yellow 34	1344-37-2	$\text{PbCrO}_4$
Lead molybdate	10190-55-3	$\text{PbMoO}_4$
Calcium plumbate	12013-69-3	$\text{Ca}_2\text{PbO}_4$
Tetramethyl lead	75-74-1	$\text{Pb}(\text{CH}_3)_4$
Tetraethyl lead	78-00-2	$\text{Pb}(\text{C}_2\text{H}_5)_4$
Lead chromate	7758-97-6	$\text{PbCrO}_4$
Lead chromate molybdate sulfate red; C.I. Pigment Red 104	12656-85-8	$\text{PbCrO}_4 (\text{CrH}_2\text{O}_4.\text{Pb});$ $\text{PbSO}_4 (\text{H}_2\text{O}_4\text{S.Pb});$ $\text{PbMoO}_4 / \text{Mo.O.Pb}$
Trilead diarsenate	3687-31-8	$\text{As}_2\text{O}_8\text{Pb}_3$
Lead styphnate; Lead 2,4,6-trinitro-m-phenylene dioxide	15245-44-0	$\text{C}_6\text{HN}_3\text{O}_8\text{Pb}$
Lead dipicrate	6477-64-1	$\text{C}_{12}\text{H}_4\text{N}_6\text{O}_{14}\text{Pb}$
Other lead compounds and alloys		

## &lt;2&gt; Major applications

- Solder and brazing materials
- Additives for electrical contact points
- Rubber vulcanization accelerators, rubber curing agents, rubber compounding ingredients, solid lubricants
- Lead-acid batteries and battery materials
- Pigments, raw materials for pigments and antirust pigments
- Paints and inks (used for PWBs and exterior and interior of electronic devices)
- Additives for glass, optical glass and special optical glass
- Reagents and raw materials for print and photographs
- Infrared ray detectors in which semiconductor elements are used
- Plating bath and anticorrosive surface treatment
- Residues in electroless plating films such as electroless nickel plating and electroless gold plating
- Lead refinement
- Stabilizers contained in the plastic (including rubber) materials and polyvinyl chloride stabilizers that are used for AC adaptors, power supply cords, connection cords, remote commanders, mice and other devices
- Dyeing
- Lubricants, curing agents, oxidizers and desiccants for paint
- Ceramics and coloring agents for glass
- Pesticides and matches
- Surface coatings (plating) for the external electrodes and lead terminals of parts incorporated in AC adaptors, remote commanders and semiconductor devices, etc. (e.g. electrical parts, semiconductor devices, and heat sinks)
- Additives and impurities in all kinds of alloys (including bronze)



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● Mercury and mercury compounds

<1> Examples

Name	CAS No.	Chemical formula
Mercury	7439-97-6	Hg
Mercury alloys; amalgam		
Mercury (I) oxide	15829-53-5	Hg <sub>2</sub> O
Mercury (II) oxide	21908-53-2	HgO
Mercury (I) chloride	10112-91-1	Hg <sub>2</sub> Cl <sub>2</sub>
Mercury (II) chloride	7487-94-7	HgCl <sub>2</sub>
Mercury (II) nitrate	10045-94-0	Hg(NO <sub>3</sub> ) <sub>2</sub>
Mercury (I) sulfate	7783-36-0	Hg <sub>2</sub> SO <sub>4</sub>
Mercury (II) fulminate	628-86-4	Hg(ONC) <sub>2</sub>
Mercury (II) acetate	1600-27-7	Hg(CH <sub>3</sub> COO) <sub>2</sub>
Methylmercury salts	e.g. 22967-92-6	CH <sub>3</sub> HgX; X=Cl, Br, I, OH, etc.
Ethylmercury salts		C <sub>2</sub> H <sub>5</sub> HgX; X=Cl, Br, I, OH, etc.
Propylmercury salts		C <sub>3</sub> H <sub>7</sub> HgX; X=Cl, Br, I, OH, etc.
Phenylmercury salts		C <sub>6</sub> H <sub>5</sub> HgX; X=Cl, Br, I, OH, etc.
Methoxyethyl-mercury salts		CH <sub>3</sub> OC <sub>2</sub> H <sub>4</sub> HgX; X=Cl, Br, I, OH, etc.
Dialkylmercury		R <sub>2</sub> Hg; R=alkyl group (C <sub>n</sub> H <sub>2n+1</sub> )
Diphenylmercury	587-85-9	(C <sub>6</sub> H <sub>5</sub> ) <sub>2</sub> Hg
Other mercury compounds		

<2> Major applications

- Paint, inks and pigments
- Hour meters
- Relays, switches and sensors whose contacts contain mercury
- Additives for plastics
- Electrodes
- Fluorescent lamps and mercury lamps
- Materials for mercury cells and batteries
- Metal etching
- Felt and catalysts
- Fungicides, preservatives, disinfectants

## ● Hexavalent chromium compounds

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

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
Chromium (VI) oxide; Chromium trioxide; trioxochromium	1333-82-0	$\text{CrO}_3$
Lithium chromate	14307-35-8	$\text{Li}_2\text{CrO}_4$
Sodium chromate	7775-11-3	$\text{Na}_2\text{CrO}_4$
Potassium chromate	7789-00-6	$\text{K}_2\text{CrO}_4$
Potassium chlorochromate	16037-50-6	$\text{K}[\text{CrO}_3\text{Cl}]$
Ammonium chromate	7788-98-9	$(\text{NH}_4)_2\text{CrO}_4$
Copper chromate	13548-42-0	$\text{CuCrO}_4$
Magnesium chromate	13423-61-5	$\text{MgCrO}_4$
Calcium chromate	13765-19-0	$\text{CaCrO}_4$
Strontium chromate (II)	7789-06-2	$\text{SrCrO}_4$
Barium chromate	10294-40-3	$\text{BaCrO}_4$
Lead chromate; Chrome yellow; Lead sulfochromate yellow; C.I. Pigment Yellow 34	1344-37-2	$\text{PbCrO}_4$
Zinc chromate	12018-19-8; 13530-65-9; 14018-95-2	$\text{ZnCrO}_4$
Sodium dichromate; Sodium bichromate	10588-01-9; 7789-12-0	$\text{Na}_2\text{Cr}_2\text{O}_7$
Potassium dichromate; Potassium bichromate	7778-50-9	$\text{K}_2\text{Cr}_2\text{O}_7$
Ammonium dichromate; Ammonium bichromate	7789-09-5	$(\text{NH}_4)_2\text{Cr}_2\text{O}_7$
Calcium dichromate; Calcium bichromate	14307-33-6	$\text{CaCr}_2\text{O}_7$
Zinc dichromate; Zinc bichromate		$\text{ZnCr}_2\text{O}_7$
Lead chromate (II)	7758-97-6	$\text{PbCrO}_4$
Lead chromate molybdate sulfate red; C.I. Pigment Red 104	12656-85-8	$\text{PbCrO}_4 (\text{CrH}_2\text{O}_4.\text{Pb});$ $\text{PbSO}_4 (\text{H}_2\text{O}_4\text{S}.\text{Pb});$ $\text{PbMoO}_4 / \text{Mo.O.Pb}$
Dichromium tris(chromate)	24613-89-6	$\text{Cr}_5\text{O}_{12}$ $\text{CrH}_2\text{O}_4.2/3\text{Cr}$
Potassium hydroxyoctaoxodizincatedichromate	11103-86-9	$\text{Cr}_2\text{HO}_9\text{Zn}_2.\text{K}$
Pentazinc chromate octahydroxide	49663-84-5	$\text{CrH}_8\text{O}_{12}\text{Zn}_5$
Other hexavalent chromium compounds		



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## <2> Major applications

- Coloring agents for ceramics, pigments, paint, inks, mordants and other additives
- Catalysts
- Surface treatment such as plating, tanning and conversion coating
- Corrosion inhibitors and anticorrosives
- Additives and their raw materials for photographs
- Materials and additives for batteries

## ● Polychlorinated biphenyls (PCB), polychlorinated naphthalenes (PCN), polychlorinated terphenyls (PCT)

### <1> Examples

Name	CAS No.	Chemical formula
PCB; Polychlorinated biphenyls	1336-36-3	$C_{12}H_{10-x}Cl_x$ ( $x = 1 - 10$ )
PCN; Polychlorinated naphthalenes	70776-03-3	$C_{10}H_{8-x}Cl_x$ ( $x = 1 - 8$ )
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	$C_{18}H_{14-x}Cl_x$ ( $x = 1 - 14$ )

## <2> Major applications

- Oils for transformers, oils for capacitors, insulating oils, lubricants, heating mediums
- Flame retardants contained in plastics
- Paint
- Preservatives

## ● Short-chain chlorinated paraffins (SCCP)

### <1> Examples

Name	CAS No.	Chemical formula
Short-chain Chlorinated paraffins C10-13	e.g. 85535-84-8	

## <2> Major applications

- Cabinets of products and flame retardants for PWBs
- Plasticizers

## ● Polybrominated biphenyls (PBB)

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
PBB; Polybrominated biphenyls; Polybrobiphenyl	67774-32-7	$C_{12}H_{10-x}Br_x$ ( $x = 1 - 10$ )
PBB; Polybrominated biphenyls; Polybrobiphenyl	59536-65-1	$C_{12}H_{10-x}Br_x$ ( $x = 1 - 10$ )
Dibromobiphenyl	92-86-4	$C_{12}H_8Br_2$
2-Bromobiphenyl	2052-07-5	$C_{12}H_9Br$
3-Bromobiphenyl	2113-57-7	$C_{12}H_9Br$
4-Bromobiphenyl	92-66-0	$C_{12}H_9Br$
Tribromobiphenyl	59080-34-1	$C_{12}H_7Br_3$
Tetrabromobiphenyl	40088-45-7	$C_{12}H_6Br_4$
Pentabromobiphenyl	56307-79-0	$C_{12}H_5Br_5$
Hexabromobiphenyl	36355-01-8	$C_{12}H_4Br_6$
2,2',4,4',5,6'-Hexabromobiphenyl	36402-15-0	$C_{12}H_4Br_6$
2,2',3,3',5,5'-Hexabromobiphenyl	55066-76-7	$C_{12}H_4Br_6$
2,2',4,4',5,5'-Hexabromobiphenyl	59080-40-9	$C_{12}H_4Br_6$
2,2',4,4',6,6'-Hexabromobiphenyl	59261-08-4	$C_{12}H_4Br_6$
3,3',4,4',5,5'-Hexabromobiphenyl	60044-26-0	$C_{12}H_4Br_6$
2,2',3,4,4',5'-Hexabromobiphenyl	67888-98-6	$C_{12}H_4Br_6$
2,3',4,4',5,5'-Hexabromobiphenyl	67888-99-7	$C_{12}H_4Br_6$
2,2',3,4',5',6'-Hexabromobiphenyl	69278-59-7	$C_{12}H_4Br_6$
2,3,3',4,4',5'-Hexabromobiphenyl	77607-09-1	$C_{12}H_4Br_6$
2,2',3,4,4',5'-Hexabromobiphenyl	81381-52-4	$C_{12}H_4Br_6$
2,2',3,3',4,4'-Hexabromobiphenyl	82865-89-2	$C_{12}H_4Br_6$



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Name	CAS No.	Chemical formula
2,2',3,3',4,5'-Hexabromobiphenyl	82865-90-5	$C_{12}H_4Br_6$
2,3,3',4',5',6-Hexabromobiphenyl	82865-91-6	$C_{12}H_4Br_6$
2,3,3',4,4',5'-Hexabromobiphenyl	84303-47-9	$C_{12}H_4Br_6$
2,3',4,4',5',6-Hexabromobiphenyl	84303-48-0	$C_{12}H_4Br_6$
2,2',3,4',6,6'-Hexabromobiphenyl	93261-83-7	$C_{12}H_4Br_6$
2,2',3,3',4,6'-Hexabromobiphenyl	119264-50-5	$C_{12}H_4Br_6$
2,2',3,3',5,6'-Hexabromobiphenyl	119264-51-6	$C_{12}H_4Br_6$
2,2',3,4,5',6-Hexabromobiphenyl	119264-52-7	$C_{12}H_4Br_6$
2,2',3,5,5',6-Hexabromobiphenyl	119264-53-8	$C_{12}H_4Br_6$
2,2',3,4,5,5'-Hexabromobiphenyl	120991-47-1	$C_{12}H_4Br_6$
2,3,3',4,5,5'-Hexabromobiphenyl	120991-48-2	$C_{12}H_4Br_6$
Heptabromobiphenyl	35194-78-6	$C_{12}H_3Br_7$
Octabromobiphenyl	61288-13-9	$C_{12}H_2Br_8$
Nonabromo-1,1'-biphenyl	27753-52-2	$C_{12}HBr_9$
Decabromobiphenyl	13654-09-6	$C_{12}Br_{10}$

## <2> Major applications

- Flame retardants contained in plastics

## ● Polybrominated diphenylethers (PBDE)

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
Polybromodiphenyl ethers; Polybromodiphenyloxides; Polybrominated biphenyl ethers; PBDE; PBDO; PBBE		$C_{12}H_{10-x}Br_xO$ ( $x = 1 - 10$ )
Decabromodiphenyl ether; Decabromodiphenyloxide; DBDE; DecaBDE; DBDPE; DBDPO	1163-19-5	$C_{12}Br_{10}O$
Octabromodiphenyl ether; Octabromodiphenyloxide; OBDE; OctaBDE	32536-52-0	$C_{12}H_2Br_8O$
Hexabromodiphenyl ether; Hexabromodiphenyloxide	36483-60-0	$C_{12}H_4Br_6O$
Hexabromodiphenyl ether; hexabromodiphenyloxide	31153-30-7	$C_{12}H_4Br_6O$
Hexabromodiphenyl ether; hexabromodiphenyloxide	35854-94-5	$C_{12}H_4Br_6O$
Hexabromodiphenyl ether; hexabromodiphenyloxide	68631-49-2	$C_{12}H_4Br_6O$
Hexabromodiphenyl ether; hexabromodiphenyloxide	116995-33-6	$C_{12}H_4Br_6O$
Hexabromodiphenyl ether; hexabromodiphenyloxide	207122-15-4	$C_{12}H_4Br_6O$
Pentabromodiphenyl ether; Pentabromodiphenyloxide; PentaBDE	32534-81-9	$C_{12}H_5Br_5O$
Pentabromodiphenyl ether; pentabromodiphenyloxide; PentaBDE	60348-60-9	$C_{12}H_5Br_5O$



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Name	CAS No.	Chemical formula
Pentabromodiphenyl ether; pentabromodiphenyloxide; PentaBDE	189084-65-9	$C_{12}H_5Br_5O$
Bromodiphenyl ether	101-55-3	$C_{12}H_9BrO$
Dibromodiphenyl ether	2050-47-7	$C_{12}H_8Br_2O$
Tribromodiphenyl ether	49690-94-0	$C_{12}H_7Br_3O$
Tetrabromodiphenyl ether	40088-47-9	$C_{12}H_6Br_4O$
Tetrabromodiphenyl ether	5436-43-1	$C_{12}H_6Br_4O$
Tetrabromodiphenyl ether	93703-48-1	$C_{12}H_6Br_4O$
Tetrabromodiphenyl ether	103173-66-6	$C_{12}H_6Br_4O$
Heptabromodiphenyl ether	68928-80-3	$C_{12}H_3Br_7O$
Heptabromodiphenyl ether	116995-32-5	$C_{12}H_3Br_7O$
Heptabromodiphenyl ether	117948-63-7	$C_{12}H_3Br_7O$
Heptabromodiphenyl ether	207122-16-5	$C_{12}H_3Br_7O$
Heptabromodiphenyl ether	446255-22-7	$C_{12}H_3Br_7O$
Nonabromodiphenyl ether	63936-56-1	$C_{12}HBr_9O$

## <2> Major applications

- Flame retardants such as plastics, paint and adhesives

● Trisubstituted organotin compounds

(including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)

Note: Metal tin, tin alloys, tin plating, and tin inorganic compounds do not fall under this category.

<1> Examples

Name	CAS No.	Chemical formula
Tributyltin bromide	1461-23-0	$(C_4H_9)_3SnBr$
Tributyltin oxide; Bis (tributyltin) oxide; Distannoxane, hexabutyl-	56-35-9	$C_{24}H_{54}OSn_2$
Triphenyl tin	668-34-8	$(C_6H_5)_3Sn$
Triphenyltin chloride; Fentin chloride; Stannane, chlorotriphenyl-	639-58-7	$(C_6H_5)_3SnCl$
Triphenyltin hydroxide; Fentin hydroxide; Stannane, hydroxytriphenyl-	76-87-9	$(C_6H_5)_3SnOH$
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	
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	$(C_4H_9)_3SnF$



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Name	CAS No.	Chemical formula
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 (lauroxyloxy) 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	$(C_4H_9)_3SnCl$
Mixture of tributyltin 1,2,3,4,4a,4b,5,6,10,10a-decahydro-7-isopropyl-1,4a-dimethyl-1-phenanthrenecarboxylate and its analogs; Tributyltin rosin salt	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	

#### <2> Major applications

- Paint and inks
- Preservatives, fungicides and disinfectants

● Dibutyltin (DBT) compounds

Note: Metal tin, tin alloys, tin plating, and tin inorganic compounds do not fall under this category.

<1> Examples

Name	CAS No.	Chemical formula
Dibutyltin oxide; Stannane, dibutyloxo-;	818-08-6	$C_8H_{18}OSn$
Dibutyltin dichloride; Stannane, dibutyldichloro-	683-18-1	$C_8H_{18}Cl_2Sn$
Dibutyltin dilaurate; Stannane, dibutylbis[(1-oxododecyl)oxy]-	77-58-7	$C_{32}H_{64}O_4Sn$
Dibutyltin bis(benzyl maleate); Benzyl (Z,Z)-8,8-dibutyl-3,6,10-trioxo-1-phenyl-2,7,9-trioxa-8-stannatrid eca-4,11-dien-13-oate;	7324-74-5	$C_{30}H_{36}O_8Sn$
Dibutyltin maleate; 2,2-Dibutyl-1,3,2-dioxastannepin-4,7-dione	78-04-6	$C_{12}H_{20}O_4Sn$
Dibutuyltin di(acetate); Diacetic acid dibutyltin salt	1067-33-0	$C_{12}H_{24}O_4Sn$

<2> Major applications

- |   |
|---|
| <ul style="list-style-type: none"> <li>- Additives in plastics such as stabilizers and antioxidants</li> <li>- Catalysts</li> </ul> |
|---|



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● Dioctyltin (DOT) compounds

Note: Metal tin, tin alloys, tin plating, and tin inorganic compounds do not fall under this category.

<1> Examples

Name	CAS No.	Chemical formula
Dioctyltin oxide	870-08-6	$C_{16}H_{34}OSn$
Dioctyltin dichloride; Stannane, dichlorodioctyl-,	3542-36-7	$C_{16}H_{34}Cl_2Sn$
Dioctyltin maleate; 2,2-Dioctyl-1,3,2-dioxastannepin-4,7-dione	16091-18-2	$C_{20}H_{36}O_4Sn$
Di(n-octyl)tin bis(isooctylthioglycolate) ; Diisooctyl 2,2'-[(dioctylstannylene)bis(thio)]diacetate	26401-97-8	$C_{36}H_{72}O_4S_2Sn$
Dioctyltin dilaurates (DOTL); Dioctylbis[(1-oxododecyl)oxy]stannane	3648-18-8	$C_{40}H_{80}O_4Sn$

<2> Major applications

<ul style="list-style-type: none"> <li>- Ingredients of stabilizers</li> <li>- Additives in plastics such as stabilizers and antioxidants</li> <li>- Catalysts</li> </ul>
---

● Asbestos

<1> Examples

Name	CAS No.	Chemical formula
Asbestos	1332-21-4; 132207-32-0; 132207-33-1	
Crocidolite	12001-28-4	$Na_2Fe_5(Si_8O_{22})(OH)_2$
Chrysotile	12001-29-5	$Mg_3Si_2O_5(OH)_4$
Amosite	12172-73-5	$(Mg, Fe)_7Si_8O_{22}(OH)_2$
Anthophyllite	77536-67-5	$(Mg, Fe)_7Si_8O_{22}(OH)_2$
Tremolite	77536-68-6	$Ca_2Mg_5Si_8O_{22}(OH)_2$
Actinolite	77536-66-4	$Ca_2(Mg, Fe)_5Si_8O_{22}(OH)_2$

<2> Major applications

<ul style="list-style-type: none"> <li>- Insulators and fillers</li> </ul>
--

## ● Formaldehyde

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
Formaldehyde; formalin; formic aldehyde; formol	50-00-0	CH <sub>2</sub> O

## &lt;2&gt; Major applications

- Preservatives
- Monomers (e.g. phenol resin, melamine resin and polyoxymethylene (POM))

## ● PVC and PVC blends

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
PVC and PVC blends; Polyvinyl chloride and polyvinyl chloride blends	e.g. 9002-86-2	

## ● Beryllium oxide

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
Beryllium oxide	e.g. 1304-56-9	BeO

## &lt;2&gt; Major applications

- Heat sinks

## ● Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
HFC-23; Trifluoromethane	75-46-7	CHF <sub>3</sub>
HFC-32; Difluoromethane	75-10-5	CH <sub>2</sub> F <sub>2</sub>
HFC-41; Fluoromethane; Methyl fluoride	593-53-3	CH <sub>3</sub> F
HFC-125; Pentafluoroethane	354-33-6	C <sub>2</sub> HF <sub>5</sub>
HFC-134; 1,1,2,2-tetrafluoroethane	359-35-3	CHF <sub>2</sub> CHF <sub>2</sub>
HFC-134a; 1,1,1,2-tetrafluoroethane	811-97-2	CH <sub>2</sub> FCF <sub>3</sub>
HFC-143; 1,1,2-trifluoroethane	430-66-0	CHF <sub>2</sub> CH <sub>2</sub> F
HFC-143a; 1,1,1-trifluoroethane	420-46-2	CH <sub>3</sub> CF <sub>3</sub>



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Name	CAS No.	Chemical formula
HFC-152a; 1,1-difluoroethane	75-37-6	$\text{CH}_3\text{CHF}_2$
HFC-227ea; 1,1,1,2,3,3,3-heptafluoropropane	431-89-0	$\text{C}_3\text{HF}_7$
HFC-236fa; 1,1,1,3,3,3-hexafluoropropane	690-39-1	$\text{C}_3\text{H}_2\text{F}_6$
HFC-245ca; 1,1,2,2,3-pentafluoropropane	679-86-7	$\text{C}_3\text{H}_3\text{F}_5$
HFC-43-10mee; 1,1,1,2,3,4,4,5,5,5-decafluoropentane; 2H,3H-decafluoropentane	138495-42-8	$\text{C}_5\text{H}_2\text{F}_{10}$
HFC-236cb; 1,1,1,2,2,3-hexafluoropropane	677-56-5	$\text{C}_3\text{H}_2\text{F}_6$
HFC-236ea; 1,1,1,2,3,3-hexafluoropropane	431-63-0	$\text{C}_3\text{H}_2\text{F}_6$
HFC-245fa; 1,1,1,3,3-pentafluoropropane	460-73-1	$\text{C}_3\text{H}_3\text{F}_5$
HFC-365mfc; 1,1,1,3,3-pentafluorobutane	406-58-6	$\text{C}_4\text{H}_5\text{F}_5$
PFC-14; Perfluoromethane; Tetrafluoromethane; Carbon tetrafluoride	75-73-0	$\text{CF}_4$
PFC-116; Perfluoroethane; Hexafluoroethane	76-16-4	$\text{C}_2\text{F}_6$
PFC-218; Perfluoropropane; Octafluoropropane	76-19-7	$\text{C}_3\text{F}_8$
PFC-31-10; Perfluorobutane; Decafluorobutane	355-25-9	$\text{C}_4\text{F}_{10}$
PFC-c318; Perfluorocyclobutane; Octafluorocyclobutane	115-25-3	$\text{c-C}_4\text{F}_8$
PFC-41-12; Perfluoropentane; Dodecafluoropentane	678-26-2	$\text{C}_5\text{F}_{12}$
PFC-51-14; Perfluorohexane; Tetradecafluorohexane	355-42-0	$\text{C}_6\text{F}_{14}$

#### <2> Major applications

- Refrigerants
- Insulation and foaming agents
- Solvent, cleaning agents and dry etching
- Extinguishing agents

## ● Perfluorooctane sulfonates (PFOS)

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
PFOS; Perfluorooctane sulfonates	e.g. 2795-39-3	$C_8F_{17}SO_2X$ (X=hydroxyl, metallic salt, halide, amide, and other derivatives, including polymers)

## &lt;2&gt; Major applications

- Water repellant agents and oil repellant agents
- Photographic films for professional use
- Resists for semiconductors
- Etching agents
- Surface treatment agents for plating and their prepared additives
- Anti-reflective coating agents used for manufacture of semiconductors
- Polishing agents
- Extinguishers, fire extinguishing agents and foam extinguishing agents for extinguishers
- Insect repellent
- Developing papers

## ● Specific benzotriazole

## &lt;1&gt; Examples

Name	CAS No.	Chemical formula
2-(3',5'-Di-tert-butyl-2'-hydroxyphenyl)benzotriazole; 2-(2'-Hydroxy-3',5'-di-tert-butylphenyl)benzotriazole; Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)-	3846-71-7	$C_{20}H_{25}N_3O$

## &lt;2&gt; Major applications

- Ultraviolet protectants and ultraviolet absorbers



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● Cobalt dichloride

<1> Examples

Name	CAS No.	Chemical formula
Cobalt dichloride	7646-79-9	$\text{CoCl}_2$

<2> Major applications

- Moisture indicator used for a desiccant agent (e.g. silica gel)

● Dimethyl fumarate (DMF)

<1> Examples

Name	CAS No.	Chemical formula
Dimethyl fumarate	624-49-7	$\text{C}_6\text{H}_8\text{O}_4$

<2> Major applications

- Fungicides and desiccant agents

**3. HISTORY OF UPDATES ON EFFECTIVE DATE OF THE BAN ON THE DELIVERY FOR EVERY SUBSTANCE**

Substances: Cadmium and cadmium compounds	
Targets	Effective date of the ban on the delivery
<ul style="list-style-type: none"> <li>- Packaging components and materials (See 4.2.1.)</li> <li>- 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)</li> <li>- Paints, inks</li> <li>- Surface treatment (e.g. electroplating, electroless plating, etc.) and coating</li> <li>- Photographic films</li> <li>- Fluorescent lamps (small-sized ones, straight-tube ones)</li> </ul>	Banned since the establishment of this Standard
All uses except those specified in Level 2 and Exemption Typical examples are given below: <ul style="list-style-type: none"> <li>- Switches, relays, breakers, DC motors, and other electrical contact points</li> <li>- Fuse elements of temperature fuses</li> <li>- Glass, and the pigments as well as dyes of glass paints (paints for glass and the pigments as well as dyes used for glass)</li> <li>- Solder (whose cadmium concentration is more than 20 ppm)</li> <li>- CdS-photocells and the phosphors contained in fluorescent display devices</li> <li>- Resistor elements (glass frit)</li> </ul>	Banned since January 1, 2005
<ul style="list-style-type: none"> <li>- Parts composed of metals containing zinc (e.g. brass, hot dip galvanizing, etc.) whose cadmium concentration is more than 100 ppm</li> </ul>	Banned since October 1, 2005
<ul style="list-style-type: none"> <li>- Optical glass</li> </ul>	Banned since June 1, 2010



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Substances: Lead and lead compounds	
Targets	Effective date of the ban on the delivery
<ul style="list-style-type: none"> <li>- Packaging components and materials (See 4.2.1.)</li> <li>- The paints, and inks containing lead, which are used for PWBs</li> </ul>	Banned since the establishment of this Standard
<ul style="list-style-type: none"> <li>- Surface coatings (plating) for the external electrodes, lead wires, and other areas of parts (e.g. electrical parts, semiconductor devices, and heat sinks)</li> <li>- 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</li> <li>- The paints and inks used for outer and exposed areas of devices</li> </ul>	Banned since April 1, 2004
<p>All uses except those specified in Level 2, Level 3 and Exemption</p> <p>Typical examples are given below:</p> <ul style="list-style-type: none"> <li>- The surface coatings for the external electrodes, lead wires, etc. of the parts contained in AC adaptors, remote commanders, semiconductor devices, etc.</li> <li>- Lead solder that meets both of the following conditions: 1) lead content is less than 85 wt%; and 2) lead content is more than 1000 ppm</li> <li>- All kinds of alloys (including solder materials) whose individual lead concentrations exceed their allowable ones provided in the table at the bottom of Exemption below. (*1)</li> <li>- The stabilizers, pigments, and dyes contained in the plastic (including rubber) materials that are used for areas (excluding outer and exposed ones) of the following articles: mice, devices, AC adaptors, connection cords, remote commanders, and power supply cords</li> <li>- The paints and inks used for areas other than the outer and exposed ones of devices</li> </ul>	Banned since January 1, 2005
<ul style="list-style-type: none"> <li>- Electroless plating films such as electroless nickel plating and electroless gold plating whose lead content is more than 1000 ppm</li> </ul>	Banned since February 1, 2006
<ul style="list-style-type: none"> <li>- Glass for all uses except those specified in Exemption</li> <li>- Solder consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80 wt% and less than 85 wt%</li> </ul>	Banned since June 1, 2010
<ul style="list-style-type: none"> <li>- Dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher</li> </ul>	Banned since January 1, 2012
<ul style="list-style-type: none"> <li>- Crystal glass as defined in Annex 1 (Categories 1, 2, 3 and 4) of EU Directive 69/493/EEC</li> </ul>	Banned since April 1, 2012

**(\*1) Allowable lead concentrations**

Type of alloy	Allowable lead concentration
Steel	up to 0.35 wt%
Aluminum alloy	up to 0.4 wt%
Copper alloys (including brass and phosphor bronze)	up to 4 wt%
Solder (*2)	up to 1000 ppm

Substances: Mercury and mercury compounds	
Targets	Effective date of the ban on the delivery
<ul style="list-style-type: none"> <li>- Packaging components and materials (See 4.2.1.)</li> <li>- Paints, and inks</li> <li>- Hour meters</li> <li>- Relays, switches, or sensors whose contacts contain mercury</li> <li>- Mercury or its compounds mixed in plastics</li> </ul>	Banned since the establishment of this Standard
<ul style="list-style-type: none"> <li>- All uses except those specified in Level 2 and Exemption</li> </ul>	Banned since January 1, 2005
<ul style="list-style-type: none"> <li>- Mercury in cold cathode fluorescent lamps and external electrode fluorescent lamps (CCFL and EEFL): Short length (not over 500 mm) : 3.5 mg or more, and less than 5 mg per lamp</li> </ul>	Banned since January 1, 2011

Substances: Hexavalent chromium compounds	
Targets	Effective date of the ban on the delivery
- Packaging components and materials (See 4.2.1.)	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
- 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
- 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: Polybrominated biphenyls (PBB)	
Targets	Effective date of the ban on the delivery
- 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
- 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: Trisubstituted organotin compounds (including tributyltin (TBT) compounds and triphenyltin (TPT) compounds)	
Metal tin, tin alloys, tin plating and tin inorganic compounds do not fall under this category.	
Targets	Effective date of the ban on the delivery
- All uses (e.g. paints, inks, preservatives, and fungicides)	Banned since the establishment of this Standard



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Substances: Dibutyltin (DBT) compounds		
Metal tin, tin alloys, tin plating and tin inorganic compounds do not fall under this category.		
Targets	Criteria/threshold levels	Effective date of the ban on the delivery
- All applications including additives of plastics (except Level 2)	- More than 1000 ppm (or 0.1 wt%) of the tin contained in materials	Banned since July 1, 2011

Substances: Dioctyltin (DOT) compounds		
Metal tin, tin alloys, tin plating and tin inorganic compounds do not fall under this category.		
Targets	Criteria/threshold levels	Effective date of the ban on the delivery
- Additives of textiles	- More than 1000 ppm (or 0.1 wt%) of the tin contained in materials	Banned since July 1, 2011

Substances: Asbestos	
Targets	Effective date of the ban on the delivery
- 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 4.2b through the decomposition methods cited in REACH Regulation (EC) No. 1907/2006 / Annex XVII and amine compounds in Table 4.2b	
Targets	Effective date of the ban on the delivery
- 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

Substance: Formaldehyde	
Targets	Effective date of the ban on the delivery
- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for import into Europe (e.g. speakers and racks)	Banned since the establishment of this Standard
- The wooden products made from fiberboard, particleboard, or plywood, which are employed in products for destinations other than Europe (e.g. speakers and racks)	Banned since January 1, 2005

Substances: Polyvinyl chloride (PVC) and PVC blends	
Targets	Effective date of the ban on the delivery
- Substrates for FeliCa contactless IC cards * For reference, the targets have never contained PVC or PVC blends.	Banned since before the establishment of this Standard
- Coating agents and fabrics for the carrying bags, carrying cases, and carrying pouches, which are designed for use with personal computers, digital cameras, camcorders, and portable audio products (excluding those for professional use)	Banned since the establishment of this Standard
- Cable ties used for accessories and connecting cords	Banned since July 1, 2002
- Packaging components and materials to protect, contain, or transport products or supplied accessories (e.g. bags, adhesive tapes, cartons, and blister packs)	Banned since January 1, 2005
- Heat shrink tubes	Banned since April 1, 2005
- Flexible flat cables (FFC) - Sheets and laminates used for exterior of wooden speakers - Insulating plates, decorative panels, labels, sheets, and laminates	Banned since April 1, 2007
- Suction cups for mounting in-vehicle products	Banned since April 1, 2010

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

Substances: Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)	
Targets	Effective date of the ban on the delivery
- All uses installed into product (e.g. refrigerant and insulation)	Banned since April 1, 2008

Substances: Perfluorooctane sulfonates (PFOS)	
Targets	Effective date of the ban on the delivery
- Materials whose PFOS concentration is 0.1 wt% or more - Textiles or other coated materials whose amount of PFOS is 1 µg/m <sup>2</sup> or more of the coated material	Banned since April 1, 2008
- All uses except those specified in Exemption (photographic films for professional use and resists for semiconductors)	Banned since April 1, 2010

Substance: Specific benzotriazole 2-(3',5'-Di-tert-butyl-2'-hydroxyphenyl)benzotriazole (CAS No. 3846-71-7)	
Targets	Effective date of the ban on the delivery
- Ultraviolet protectants and ultraviolet absorbers applied to decorative laminate, developing papers, molded plastic parts	Banned since April 1, 2008
- Lenses and frames of glasses	Banned since April 1, 2011



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Substance: Cobalt dichloride	
Targets	Effective date of the ban on the delivery
- Moisture indicator used for a desiccant agent (e.g. silica gel)	Banned since April 1, 2009
- Humidity indicator card which is impregnated with cobalt dichloride	Banned since April 1, 2011

Substance: Ozone depleting substances (ODS)	
ODS in Table 4.2d	
Targets	Effective date of the ban on the delivery
- All uses for refrigerant, insulation and other products - Components and materials processed with ODS during cleaning, foaming and other processes	Banned since before the establishment of this Standard

Note: The incorrect CAS No. 165-97-7 in Table 4.2d is replaced with the correct CAS No. 2354-06-5.

Substances: Dimethyl fumarate (DMF)	
CAS No. 624-49-7	
Targets	Effective date of the ban on the delivery
- All uses (e.g. fungicides and desiccant agents)	Banned since April 1, 2010







To Bangkok Cable Co., Ltd.  
39/1 Moo 1 Bangpakong-Chachoengsao Rd.,  
Sanphudas, Banpho, Chachoengsao 24140 Thailand  
Tel. 038-577-266 to 9  
Fax. 038-577-270 to 1  
Attn \_\_\_\_\_

Date \_\_\_\_\_  
From \_\_\_\_\_  
Address \_\_\_\_\_  
Tel. \_\_\_\_\_  
Fax. \_\_\_\_\_  
Person in charge \_\_\_\_\_  
Product name \_\_\_\_\_

Company stamp

### Certification for not using Hazardous Substances in Products

Our company hereby certify that all products or components (attachments, packaging material and other items supplied with the product) that are supplied directly or through a third party, to your company or your subsidiaries does not include any of the following substances.

Substances	Remark
1. Cadmium and cadmium compounds	Level 1
2. Lead and lead compounds	Level 1
3. Mercury and mercury compounds	Level 1
4. Hexavalent chromium compounds	Level 1
5. Polychlorinated biphenyls (PCB), Polychlorinated naphthalenes (PCN), Polychlorinated Terphenyles (PCT)	Level 1
6. Shot-chain chlorinated paraffins (SCCP)	Level 1
7. Polyvinyl chloride (PVC) and PVC blends	Level 3
8. Tris (2-chloroethyl) phosphate (TCEP)	Level 2 (July 1, 2014)
9. Other chlorinated organic compounds	Level 3
10. Polybrominated biphenyls (PBB)	Level 1
11. Polybrominated diphenylethers (PBDE) including DecaBDE	Level 1
12. Hexabromocyclododecane (HBCDD)	Level 2 (Jan. 1, 2015)
13. Other brominated organic compounds	Level 3
14. Trisubstituted organotin compounds (including Tributyltin (TBT) compounds and Triphenyltin (TPT) compounds)	Level 1
15. Dibutyltin (DBT) compounds	Level 1
16. Dioctyltin (DOT) compounds	Level 1
17. Asbestos	Level 1
18. Specific Azo compounds	Level 1
19. Formaldehyde	Level 1
20. Specific benzotriazole	Level 1
21. Dimethyl fumarate (DMF)	Level 1
22. Beryllium oxide	Level 1
23. Beryllium copper	Level 3
24. Cobalt dichloride	Level 1
25. Diarsenic trioxide, Diarsenic pentaoxide	Level 2 (July 1, 2014)
26. Bis (2-ethylhexyl) phthalate, Dibutyl phthalate, Benzyl butyl phthalate, Diisobutyl phthalate	Level 2 (July 1, 2014)
27. Di-isononyl phthalate, Di-isodecyl phthalate, Di-n-octyl phthalate, Di-n-hexyl phthalate "1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich", "1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters", Bis (2-methoxyethyl) phthalate	Level 3
28. Hydrofluorocarbon (HFC), Perfluorocarbon (PFC)	Level 1
29. Ozone depleting substance (ODS)	Level 1
30. Perfluorooctane sulfonates (PFOS)	Level 1
31. Boric acid, specific sodium borates	Level 3
32. 4-(1,1,3,3-tetramethylbutyl) phenol	Level 3
33. Bis (2-methoxyethyl) ether	Level 3
34. N,N-dimethylacetamide (DMAC)	Level 3

Remark : 1. "Level 1" means the substances are banned for the use in parts and materials. Allowable concentration of **Cadmium and cadmium compounds** and **Lead and lead compounds** in plastics, paints, inks is less than 100 ppm in homogeneous materials.  
2. "Level 2" means the substances shall be reclassified in to Level 1 on the date set in the table.  
3. "Level 3" means no effective date of ban is currently set.  
4. If the products contain any substances, they shall be noted by asterisk (\*)  
5. With reference to Sony Technical Standard, SS-00259.

**BANGKOK CABLE CO., LTD. (Material Purchasing Section)**

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**INFORMATION CIRCULATION FORM**

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**Attention:** All Concerning

**Information share for awareness**



Environment



Quality



Other

Please see attach file and kindly to acknowledge by sign at below this form then return to us within May 31, 2012.

**1. Sony Technical Standard (SS—00259 Eleventh Edition)**

Information By: Nunta Boonnayanont  
Title: Material Purchasing Section Manager

E-mail: purchasing@bangkokcable.com  
Date: 11 May 2012

Acknowledge By:  
Title:

E-mail:  
Date: