

**Hirakawa Hewtech Corp.**  
**Management Standards for the**  
**Environment-related Substances**  
**Ver13.0**

## 1. Purpose

This standard is made by Hirakawa Hewtech Corp. group (hereafter called "the company"), with regard to the "Environment-related Substances to be controlled ("Controlled Substances)" contained in the raw materials, parts, devices, and the Packaging Components and Materials of which are employed in the product that the company manufactures and sells. With clarifies the Banned substance, Substance to be phased out, and Exempted substances, in order to prevent the substances from being used (filled up) into products, the company also complies with relevant laws and regulations, contributing to the preservation of global environment and aim to establish a recycling-oriented society.

## 2. Operation of management standards

With to promoting the green procurement actively, the company procure the products and services that contained less environment-related substance from the suppliers which are acting with environmental-conservation activities also considered in light-weight, long-life-use, easy recycling, easy-degrading, easy-treatment and energy-saving of environment-conscious products. Accordingly, the company is required to obtain ISO14001 certification and involved in environmental-protection activities aggressively.

## 3. Scope of management standard

- (1) Survey on environmental-conservation activities to all suppliers.
- (2) Definition of Banned substances and Effective date of ban.
- (3) Survey on procurement of environment-related substances.  
Regarding the survey on environment-related substances contained in parts and production, it shall be based on old JGPSSI and JAMP standard respectively, besides, some of the substances are to be requested according to the company's controlled substances regulations separately.
- (4) Management of the environment-related substance on the processing process.  
Measurement and inspection of chemical substances by the X-ray fluorescence analyzer to those purchased parts and products.

## 4. Survey on environmental-conservation activities to all suppliers

All suppliers that supply procurement to the company are the target to be surveyed and to be ensured that the environmental-conservation activities (e.g. ISO14001 approval / Self-environmental-conservation activities) which has been acting properly according to the related-regulations.

## 5. Survey on procurement of environment-related substances and limits

Applicable to the company's products to configure by the following as raw materials, parts, device, packaging components and materials, also survey on procurement concerning environment-related substance

- (1) Resin for molding such as plastic e.t.c., and metal such as copper wire e.t.c.
- (2) Functional units, modules, board assemblies and other assembly parts.
- (3) Electrical parts, mechanical parts, semiconductor devices, PWBs, recording media, and the packaging components and materials.
- (4) Screws
- (5) Accessories (remote command controllers, mice, AC adaptors and other accessories with which are for apparatus used).
- (6) Materials constituting subsidiary parts and materials (e.g. adhesive tape, soldering materials, adhesives etc. ) used for products.
- (7) Printed materials (e.g. instruction manual, warranty cards, additional product/parts information) .
- (8) Repair parts (The application of some repair parts for products on the market shall be followed the instruction on the separately issued notice.)
- (9) The Packaging components and materials which used by suppliers for delivery and protection are defined in Table 9.1.
- (10) Batteries

## 6. Management of the environment-related substances on the processing process

Regarding the management to the procurement and the control of through the processing process to delivery, to be operating appropriately, according to the provisions of each department.

## 7. Definition of Banned substances and Effective date of ban

In this Standard, terms are defined as following;

- (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 the company's judgment, have significant environmental-impact on both humans and the global environment. (part of the substances are comply with the provisions of old JGPSSI) .

## (2) Controlled level

## ① Banned Substances

The substances and their applications classified into "Banned Substances" are substances that are banned from the use in parts and materials.

## ② Reduced Substances (with a period limitation of banned substance)

Switching to alternative materials and to advance the policy be abolished as soon as possible.

However, the substances shall be banned immediately if the alternative materials technology has become possible to establish. Also, the "effective date of the banned" shall be reviewed, if the unavailability of adequate alternative parts and materials that satisfy the intended uses, depending on substances are not regulated by or exemption from laws.

## ③ Controlled Substances (the substances which are aim to be reduced)

No effective date for banning the use is currently set for the substances and their applications classified into "Controlled Substances" are to be reduce the concentration in raw materials, parts, devices, and the Packaging Components and Materials for uses.

## ④ Exemption

The substances and their applications classified as "Exemption" are those substances not regulated or exempted from laws, due to the unavailability of adequate alternative parts and materials that satisfies the intended uses.

## (3) Contained

"Contained" is a situation in which a substance is added to, is blended with, fills up, or adheres to the parts or devices employed in products, or the materials used for the parts or device, regardless if the situation is intentionally created or not. (including this situation in which a substance is unintentionally contained in, or added to a product in a processing process)

## (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) Homogeneous material

"Homogenous material" means one material of unform composition throughout or a material, consisting of a combination of material, that cannot be disjointed or separated into different materials by mechanical actions, such as unscrewing, cutting, crushing, grinding and abrasive processes.

## (6) Material

"Material" means substance or mixture within a product or product part.

## (7) Part

"Part" mesns an article to be manufactured until it tums into an end product (the final article which is the outcome of assembling, processing or manufacturing chemical products and/or parts).

## (8) Article

"Article" mesns an item of specific shape,appearance or design created during manufacture which substantially determines functions in final use rather than functions provided by its chemical composition.

## (9) Product

"Product" mesns a part or an end product which is delivered to a customer as the outcome of business activities of the organization.

(10) Criteria/threshold level

"Criteria/threshold level" is a condition or a numerical value. The use of a controlled substance is prohibited or will be prohibited in the future if

- a) that controlled substance fulfills the condition or
- b) the concentration of the controlled substance matches or exceeds the specified numerical value

Notes: \* When criteria such as 'Intentionally added' and a numerical value are shown in 'Criteria/threshold levels', both of them shall be satisfied.

(11) Effective date of ban on use

The date of the adaptation products to be shipped. It means the "Controlled substances" is not contained in raw materials, parts, devices, and the Packaging Components and Materials etc. that compose in the product.

(12) Packaging Components and Materials

The Packaging Components and Materials means which are used by the company for packaging and delivery of goods such as carton, instructions, tape, vinyl-tie, raps, labels, and other parts of the printed material (e.g. plastics, paper, inks, adhesives and paints, etc.).

## 8. Environment-related Substances to be controlled (The Controlled Substances) ,defined in this Standard.

**Table 8.1 (The Controlled Substances)**

No.	Substances
1	Cadmium and cadmium compounds
2	Lead and lead compounds
3	Mercury and mercury compounds
4	Hexavalent chromium compounds
5	Polybrominated biphenyls(PBB)
6	Polybrominated diphenylethers(PBDE)
7	Hexabromocyclododecane(HBCDD) and all major diastereoisomers identified
8	Brominated flame retardants(BFR)
9	Polychlorinated biphenyls(PCB) and specific substitutes
10	Polychlorinated naphthalenes(PCN)
11	Polychlorinated terphenyls(PCT)
12	Short-chain chlorinated paraffins(Alkanes, C10-13)(SCCP)
13	Tris(2-chloroethyl)phosphate(TCEP),Tris(1-chloro-2-propyl)phosphate(TCPP), Tris(1,3-dichloro-2-propyl)phosphate(TDCPP)
14	Perchlorates
15	Polyvinyl chloride(PVC)and PVC blends
16	Chlorinated flame retardants(CFR)
17	Hydrofluorocarbon(HFC),Perfluorocarbon(PFC),Sulfur hexafluoride(SF <sub>6</sub> )
18	Ozone depleting substances(ODS)
19	Perfluorooctane sulfonates(PFOS)
20	Perfluorooctanoic acid(PFOA) and individual salts and esters of PFOA
21	Tri-substituted organostannic compounds
22	Dibutyltin(DBT)compounds
23	Dioctyltin(DOT)compounds
24	Beryllium oxide
25	Beryllium copper
26	Cobalt dichloride
27	Diarsenic trioxide,Diarsenic pentoxide
28	Bis(2-ethylhexyl)phthalate(DEHP),Dibutyl phthalate(DBP),Benzyl butyl phthalate(BBP), Diisobutyl phthalate(DIBP)
29	Di-isononyl phthalate(DINP), Di-isodecyl phthalate(DIDP), Di-n-octyl phthalate(DNOP)
30	Di-n-hexyl phthalate(DnHP), "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,Diisopentylphthalate, "1,2-Benzenedicarboxylic acid, dipentylester, branched and linear", N-pentyl-isopentylphthalate,Dipentyl phthalate,"1,2-Benzenedicarboxylic acid,dihexyi ester,branched and linear"
31	Asbestos
32	Azocolourants and azodyes which form certain aromatic amines
33	Formaldehyde
34	Benzenamine,N-phenyl-,reaction products with styrene and 2,4,4-trimethylpentene (BNST)
35	2-(2H-1,2,3-benzotriazol-2-yl)-4,6-di-tert-butylphenol(UV-320)
36	Dimethyl fumarate(DMF)
37	Polycyclic aromatic hydrocarbons(PAHs)
38	Tris(2,3-brominated propyl)phosphate(TRIS)
39	Tri(1-aziridin)phoshinoxide(TEPA)

No.	<b>Substances</b>
40	Hexachlorobenzene
41	Red phosphate
42	Substances in candidate list for authorization of EU REACH regulation(SVHC)

Table 8.2 Main "Targets" and "Effective date of the ban on the delivery" regarding 'Controlled Substances'

No.1	<b>Substances: Cadmium and cadmium compounds</b>		
	Targets	Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>• Plastics (including rubbers)</li> <li>• Paints</li> <li>• Inks</li> </ul> Note: Insulation of wires, cables and cords are defined as plastics (including rubbers).	<ul style="list-style-type: none"> <li>• 100ppm (0.01wt%) or more of the cadmium in homogeneous materials(*)</li> </ul>	Banned
	<ul style="list-style-type: none"> <li>• Solders</li> </ul>	<ul style="list-style-type: none"> <li>• More than 20ppm (0.002wt%) of the cadmium in solder</li> </ul>	
	<ul style="list-style-type: none"> <li>• All applications other than the above (See 9 Additional rules for packaging components and materials.)</li> </ul>	<ul style="list-style-type: none"> <li>• 100ppm (0.01wt%) or more of the cadmium in homogeneous materials</li> </ul>	
Exemption	<ul style="list-style-type: none"> <li>• Cadmium and its compounds in electrical contacts</li> <li>Note: applicable to platings used for electrical contacts that require high reliability and have no alternative materials</li> <li>• Cadmium in filter glasses</li> </ul>		
(*) Plastics(including rubbers), paints, and inks are required to be tested in accordance with the following standards.			
Standards for measurement 1) Sample preparation Typical sample preparation methods: e.g. IEC 62321-5:2013, EPA3052:1996 (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 EN71-3:2014,ASTM F963-16,ASTM D 5517-14, and ISO 8124-3:2010)shall not be applied. 2) Measurement methods Typical measurement methods: e.g.. IEC 62321-5:2013 (1) Inductively Coupled Plasma-Optical(Atomic) Emission Spectrometry (ICP-OES[ICP-AES]) (2) Atomic Absorption Spectrometry (AAS) (3) Atomic Fluorescence Spectrometry (AFS) (4) Inductively Coupled Plasma=Mass Spectrometry (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.			

No.2	<b>Substances: Lead and lead compounds</b>		
	Targets	Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>• Plastics (including rubbers)</li> <li>• Paints</li> <li>• Inks</li> </ul> Note: Insulation of wires,cables and cords are defined as plastics (including rubbers).	<ul style="list-style-type: none"> <li>• More than 100ppm (0.01wt%) of the lead in homogeneous materials(*)</li> </ul>	Banned
	<ul style="list-style-type: none"> <li>• All applications other than the above (See 9 Additional rules for packaging components and materials.)</li> </ul>	<ul style="list-style-type: none"> <li>• 1000ppm (0.1wt%) or more of the lead in homogeneous materials</li> </ul>	
Exemption	<ul style="list-style-type: none"> <li>• Lead in glass of cathode ray tubes</li> <li>• lead in glass of fluorescent tubes not exceeding 0.2% by weight</li> <li>• Lead as an alloying element in steel for machining purposes and in galvanised steel containing up to 0.35% lead by weight</li> <li>• Lead as an alloying element in aluminium containing up to 0.4% lead by weight</li> <li>• Copper alloy containing up to 4% lead by weight</li> <li>• Lead in high melting temperature type solders (i.e. lead based alloys containing 85wt% by weight or more lead)</li> <li>• Electrical and electronic component containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g.piezoelectronic devices, or in a glass or ceramic matrix compound</li> <li>• Lead in dielectric ceramic in capacitors for a rated voltage of 125V AC or 250 V DC or higher</li> <li>• Lead in PZT based dielectric ceramic materials for capacitors which are part of integrated circuits or discrete semiconductors</li> <li>• Lead in white glasses used for optical applications</li> <li>• Lead in filter glasses</li> <li>• Lead in solder to complete a viable electrical connection between semiconductor die and carrier within integrated circuit flip chip packages Note: The item covers solder pastes used under C4 (Controlled Collapse Chip Connection) bumps.</li> <li>• Lead in cermet-based trimmer potentiometer elements</li> </ul>		
(*) Plastics (including rubbers), paints, and inks are required to be tested in accordance with the following standards			
Standards for measurement 1) Sample preparation Typical sample preparation methods: e.g. IEC 62321-5: 2013,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 EN71-3:2014,ASTM F963-16,ASTM D 5517-14, and ISO 8124-3:2010)shall not be applied. 2) Measurement methods Typical measurement methods:e.g.IEC 62321-5:2013 (1) Inductively Coupled Plasma-Optical(Atomic) Emission Spectrometry (ICP-OES[ICP-AES]) (2) Atomic Absorption Spectrometry (AAS) (3) Atomic Fluorescence Spectrometry (AFS) (4) Inductively Coupled Plasma-Mass Spectrometry (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 8.2a "Allowable lead concentrations" is deleted since its content was incorporated into Exemption.



No.3	<b>Substances: Mercury and mercury compounds</b>		
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>All applications (See 9 Additional rules for packaging components and materials.)</li> </ul>	<ul style="list-style-type: none"> <li>Intentionally added or</li> <li>1000ppm (0.1wt%) or more 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 500mm):Not exceeding 3.5mg of mercury per lamp Medium length (over 500mm and not over 1500mm):Not exceeding 5mg of mercury per lamp Long length (over 1500mm):Not exceeding 10mg of mercury per lamp</li> <li>Mercury in high-pressure gas discharge lamps(e.g.projector lamps)</li> </ul>		

No.4	<b>Substances:Hexavalent chromium compounds</b>		
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	<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>Natural leather parts and materials</li> </ul>	<ul style="list-style-type: none"> <li>3ppm (0.0003wt%) or more of the dry weight of the natural leather materials</li> </ul>	
	<ul style="list-style-type: none"> <li>All applications other than the above (see 9 Additional rules for packaging components and materials.)</li> </ul>	<ul style="list-style-type: none"> <li>1000ppm (0.1wt%) or more of the hexavalent chromium in the homogeneous materials</li> </ul>	

Testing methods(for reference)

The methods for natural leather materials are as follows.

- 1) EN ISO 17075 : 2007
- 2) IULTCS/IUC18(conform with ISO 17075:2007)

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

No.5	<b>Substances: Polybrominated biphenyls(PBB)</b>		
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>All uses</li> </ul>	<ul style="list-style-type: none"> <li>Intentionally added</li> <li>1000ppm (0.1wt%) or more of the homogeneous materials</li> </ul>	Banned

No.6	<b>Substances: Polybrominated diphenylethers (PBDE) (including decabromodiphenyl ether [DecaBDE])</b>		
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>All uses</li> </ul>	<ul style="list-style-type: none"> <li>1000ppm (0.1wt%) or more of the homogeneous materials</li> </ul>	Banned

No.7	<b>Substances: Hexabromocyclododecane(HBCDD) and all major diastereoisomers identified</b>		
CAS No.25637-99-4, 3194-55-6, 134237-50-6, 134237-51-7, 134237-52-8, 4736-49-6, 65701-47-5, 138257-17-7, 138257-18-8, 138257-19-9, 169102-57-2, 678970-15-5, 678970-16-6, 678970-17-7			
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added or • More than 1000ppm (0.1wt%) or more of the homogeneous materials	Banned

NO.8	<b>Substances:Brominated flame retardants(BFR)</b>		
(other than PBBs, PBDEs, HBCDD)			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Controlled Substances	• Flame retardants used for printed wiring board laminate	• More than 900ppm (0.09wt%) bromine content by weight in the laminate	
	• Flame retardants of plasticizers contained in plastic parts other than the above	• Intentionally added	

No.9	<b>Substances:Polychlorinated biphenyls(PCB) and specific substitutes</b>		
CAS No. of Specific substitutes are [76253-60-6], [81161-70-8] and [99688-47-8]			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added	Banned

No.10	<b>Substances:polychlorinated naphthalenes(PCN)</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added	Banned

No.11	<b>Substances:polychlorinated terphenyls(PCT)</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• 50ppm(or 0.005wt%) or more of the materials	Banned

No.12	<b>Substances: Short-chain chlorinated paraffins(Alkanes, C10-13)(SCCP)</b>		
Short-chain chlorinated paraffins with carbon chain lengths of 10-13			
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added or • More than 1000ppm (0.1wt%) of the materials	Banned

No.13	<b>Substances: Tris(2-chloroethyl) phosphate (TCEP), Tris(1-chloro-2-propyl)phosphate(TCPP), Tris(1,3-dichloro-2-propyl)phosphate(TDCPP)</b>		
CAS No.115-96-8, 13674-84-5, 13674-87-8			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• More than 1000ppm (0.1wt%) of the materials	Banned

No.14	<b>Substances: Perchlorates</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Controlled Substances	• All uses	• 6ppb (0.006ppm) of the materials	

No.15	<b>Substances: Polyvinyl chloride (PVC) and PVC blends</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>• Substrates for FeliCa contactless IC cards</li> <li>• 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</li> <li>• Cable ties used for accessories and connecting cords</li> <li>• Packaging components and materials to protect, contain, or transport products or supplied accessories(e.g. bags, adhesive tapes, cartons, and blister packs) Note that packaging components or materials for devices, semiconductors, and any other components (e.g. trays, magazine sticks, stoppers, reels, embossed carrier tapes) are excluded</li> <li>• Heat shrink tubes(excluding those for batteries)</li> <li>• Flexible flat cables(FFC)</li> <li>• Insulating plates, decorative panels, labels(excluding those for batteries)</li> <li>• Sheets, and laminates(including sheets and laminates used for exterior of wooden speakers)</li> <li>• Suction cups for mounting in-vehicle products</li> </ul>	• Intentionally added	Banned
Controlled Substances	• All applications other than Banned Substances	• Intentionally added	
Exemption	• Binder for resins used for paints, inks, coating agents, adhesives etc.		

No.16	<b>Substances: Chlorinated flame retardants(CFR)</b> (other than TCEP, TCPP, TDCPP)		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Controlled Substances	• Flame retardants used for printed wiring board laminate	• More than 900ppm (0.09wt%) chlorine content by weight in the laminate	
	• Flame retardants or plasticizers contained in plastic parts other than the above	• Intentionally added	

No.17	<b>Substances: Fluorinated greenhouse gases(PFC, SF<sub>6</sub>, HFC)</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added	Banned
Exemption	• Sulfur hexafluoride incorporated into surge absorber in power unit for projector		

No.18	<b>Substances: Ozone depleting substances(ODS)</b>		
Subjected substance (*) in Montreal Protocol appendix A, B, C, E			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added	Banned
	• Components and materials processed with ODS	• Process with ODS cleaning, foaming or other processes	
* Reference : <a href="http://www.env.go.jp/earth/ozone/montreal_protocol.html">http://www.env.go.jp/earth/ozone/montreal_protocol.html</a> (Official web site from Environment Department) <a href="http://ozone.unep.org/en/handbook-montreal-protocol-substances-deplete-ozone-layer/5">http://ozone.unep.org/en/handbook-montreal-protocol-substances-deplete-ozone-layer/5</a> (Web site from UNEP Ozone Secretariat)			

No.19	<b>Substances: Perfluorooctane sulfonates (PFOS)</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• Textiles (cloth) or other coated materials	• More than 1 $\mu$ g/m <sup>2</sup> to homogeneous material	Banned
	• All except the above material	• Intentionally added or • More than 1000ppm • (0.1wt%) to the material	Banned
Exemption	• Any photoresists or anti-reflective coatings for photolithography processes • Any photographic coatings applied to films, papers, or printing plates		

N0.20	<b>Substances: Perfluorooctanoic acid (PFOA)and individual salts and esters of PFOA</b>		
CAS No. 335-67-1, 3825-26-1, 335-95-5, 2395-00-8, 335-93-3, 335-66-0, 376-27-2, 3108-24-5			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• Textiles, photographic coatings applied to films, paper or printing plates and other coated consumer products	• More than 1 $\mu$ g/m <sup>2</sup> of the coated material	Banned
	• All except the above material	• More than 1000ppm (0.1wt%) of the materials	Banned

N0.21	<b>Substances: Tri-substituted organostannic compounds</b>		
including tributyltin(TBT) compounds and triphenyltin(TPT) compounds			
Targets		Criteria/threshold level	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added or • More than 1000ppm (0.1wt%) of the tin contained in materials	Banned

No.22 <b>Substances: Dibutyltin (DBT) compounds</b>			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>All uses</li> </ul>	<ul style="list-style-type: none"> <li>More than 1000ppm (0.1wt%) of tin element contained in a product</li> </ul>	Banned
Exemption	<ul style="list-style-type: none"> <li>Packaging components and materials for parts and devices, which are reused and not provided to the consumer</li> <li>Packaging components or materials for devices, semiconductors, and any other components (e.g. trays, magazine sticks, stoppers, reels, embossed carrier tapes)</li> </ul>		

No.23 <b>Substances: Dioctyltin (DOT) compounds</b>			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>Textile and leather articles intended to come into contact with the skin</li> <li>Childcare articles</li> <li>Two-component room temperature vulcanisation moulding kits (RTV-2 moulding kits)</li> </ul>	<ul style="list-style-type: none"> <li>More than 1000ppm (0.1wt%) of tin element contained in a product</li> </ul>	Banned

No.24 <b>Substances: Beryllium oxide</b>			
Targets		Criteria/threshold level	Effective edate of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>All uses</li> </ul>	<ul style="list-style-type: none"> <li>More than 1000ppm (or 0.1wt%) of the tin contained in materials</li> </ul>	Banned

No.25 <b>Substances: Beryllium copper</b>			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Controlled Substances	<ul style="list-style-type: none"> <li>All uses</li> </ul>	<ul style="list-style-type: none"> <li>Intentionally added or use</li> </ul>	

No.26 <b>Substances: Cobalt dichloride</b>			
CAS No. [7646-79-9]			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>Moisture indicator used for a desiccant agent (e.g. silica gel)</li> </ul>	<ul style="list-style-type: none"> <li>Intentionally added</li> </ul>	Banned
	<ul style="list-style-type: none"> <li>Humidity indicator card which is impregnated with cobalt dichloride</li> </ul>	<ul style="list-style-type: none"> <li>More than 1000ppm (0.1wt%) of the tin contained in materials</li> </ul>	Banned
Controlled Substances	<ul style="list-style-type: none"> <li>All application other than the above</li> </ul>	<ul style="list-style-type: none"> <li>More than 1000ppm (0.1wt%) of the tin contained in materials</li> </ul>	

No.27	<b>Substances: Diarsenic trioxide, Diarsenic pentaoxide</b>		
The target substances are as follows: CAS No.1327-53-3, 1303-28-2. The following threshold level for each substance shall be applied.			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• Antifoam agents or fining agents for LCD panels (including cover glasses, touchscreens, and backlights)	• More than 1000ppm (0.1wt%) of the materials	Banned
Controlled Substances	• All uses other than above	• More than 1000ppm (or 0.1wt%) of the parts materials	

No.28	<b>Substances: Bis(2-ethylhexyl)phthalate(DEHP), Dibutyl phthalate(DBP), Benzyl butyl phthalate(BBP), Diisobutyl phthalate(DIBP)</b>		
The target substances are as follows: CAS No.117-81-7, 84-74-2, 85-68-7, 84-69-5 (Refer to Table 8.2c-1). The following threshold level for each substance shall be applied.			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substance	• Parts and materials for EEE (note that parts and materials for batteries are Controlled Substance) • Parts and materials for carrying bags, carrying cases, carrying pouches	• More than 1000ppm (0.1wt%) of the homogeneous material	Banned
Controlled Substance	• Packaging parts and materials (including those for devices, semiconductors, and any other components (e.g. trays, magazine sticks, stoppers, reels, embossed carrier tapes)) • Parts and materials for batteries • All application other than the above (e.g. printed materials such as instruction manuals)	• More than 1000ppm (0.1wt%) of the homogeneous material	

**Table 8.2c-1 List of specific phthalates (phthalic esters)(1)**

Abbreviation	CAS No.	Chemical
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

No.29	<b>Substances: Di-isononyl phthalate(DINP), Di-isodecyl phthalate(DIDP), Di-n-octyl phthalate(DNOP)</b>		
CAS No.28553-12-0, 68515-48-0, 26761-40-0, 68515-49-1, 117-84-0			
Targets		Criteria/threshold levels	Effective date of the
Banned Substances	• Parts and materials for children's mouth toys or child care products	• 1000ppm (0.1wt%) as the sum of the phthalate (DINP, DIDP, DNOP) concentrations in materials	Banned
Controlled Substances	• All uses other than above	• Intentionally added • More than 1000ppm (0.1wt%) of the materials	

No.30	<b>Substances: Di-n-hexyl phthalate(DnHP)</b>		
CAS No.84-75-3			
Targets		Criteria/threshold levels	Effectiv date of the ban on the delivery
Controlled Substances	• All uses	• More than 1000ppm (or 0.1wt%) of the materials	

No.31	<b>Substances: Asbestos</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added	Banned

No.32	<b>Substances: Azocolourants and azodyes which form certain aromatic amines</b>		
Regarding certain aromatic amines, see Table 8.2d			
Targets		Criteria/threshold levels	Effective date of the
Banned Substances	• Additives of textiles and leathers	• More than 30ppm (0.003wt%) in textiles and leathers	Banned
Testing methods (for reference) The methods for decomposing azo compounds and then extracting amines are as follows.			
1) For textiles: EN 14362-1:2012; EN 14362-2:2012 for 4-aminoazobenzene			
2) For leather: EN ISO 17234-1:2015; EN ISO 17234-2:2011 for 4-aminoazobenzene			

**Table 8.2d List of certain aroamine 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-chloroanilene)
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

No.33	<b>Substances; Formaldehyde</b>		
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• 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
	• Textiles	• More than 75ppm (0.0075wt%) in textiles	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 0.1ppm (or 0.124mg/ m <sup>3</sup> ) in an air-tight test chamber whose volume is 12m <sup>3</sup> ,1m <sup>3</sup> ,or 0.0225m <sup>3</sup>			
2) [With a perforator method] • Equal to or less than 6.5mg in 100g of a particleboard without a surface treatment(the average value during six months) • Equal to or less than 7.0mg in 100g of a fiberboard without a surface treatment (the average value during six months) • Equal to or less than 8.0mg in 100g 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: 0.5mg/l or less • Maximum content: 0.7mg/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 ISO12460:2015 • A desiccator method specified in JIS A 5905 (Fiberboards) and JIS A 5908 (Particleboards)			
In addition to the above requirements, hardwood plywood, particleboard and medium-density fiberboard including thin medium-density fiberboard, which are employed in products (e.g.speakers and racks) are required to satisfy in accordance with the following standards.			
Threshold level (dissipation value)) : • Dissipation level 0.000005%(0.05ppm) for hardwood plywood(HWPW) • Dissipation level 0.000009%(0.09ppm) for particleboard(PB) • Dissipation level 0.000011%(0.11ppm) for medium density fiberboard(MDF) • Dissipation level 0.000013%(0.13%) for thin medium density fiberboard(thin MDF)			
Test method : one of the following methods • ASTM E1333-14 • ASTM D6007-14 (Remark) As long as the previous edition of the above test methods is permitted by a third certificate laboratory, it shall be regarded as an equivalent edition to the above.			

No.34	<b>Substances: Benzenamine,N-phenyl-,reaction products with styrene and 2,4,4-trimethylpentene(BNST)</b>		
CAS No.68921-45-9			
Targets		Criteria/threshold levels	Effective date of the
Banned Substances	• All uses	• Intentionally added	Banned
Exemption	•Additives of rubber(note that such used for tires are Banned Substances)		



No.35	<b>Substances: 2-(2H-1,2,3-benzotriazol-2-yl)-4,6-di-tert-butylphenol(UV-320)</b>		
CAS No.[3846-71-7], Synonym: "Phenol, 2-(2h-benzotriazol-2-yl)-4,6-bis(1,1-dimethlethyl)-", "2-(3',5'-Di-tert-butyl-2'-hydroxyphenyl)benzotriazole"			
Targets		Criteria/threshold levels	Effective date of the
Banned Substances	• All uses	• Intentionally added or • More than 1000ppm (0.1wt%) of the materials	Banned

No.36	<b>Substances: Dimethyl fumarate (DMF)</b>		
CAS No. 624-49-7			
Targets		Criteria/threshold levels	Effective date of the
Banned Substances	• All uses	• More than 0.1ppm (0.00001wt%) to homogeneous material	Banned

No.37	<b>Substances: Polycyclic aromatic hydrocarbons (PAHs)</b>		
CAS No. 50-32-8, 192-97-2, 56-55-3, 218-01-9, 205-99-2, 205-82-3, 207-08-9, 53-70-3			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Reduced Substances	• Rubber or plastic parts of toys and childcare articles that come into direct, prolonged or repetitive skin or oral cavity contact	• More than 0.5ppm (0.00005 wt%) of the materials	Banned
	• Rubber or plastic parts that come into direct, prolonged or repetitive skin or oral cavity contact except those for toys or childcare articles	• More than 1ppm (0.0001 wt%) of the materials	Banned

No.38	<b>Substances:Tris(2,3-brominated propyl) phosphate(TRIS)</b>		
CAS No.126-72-7			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• The textiles which may come in contact with skin of the human body directly	• Intentionally added • Prohibition of the Adhesion in process of manufacture, Mixture,and generation	Banned

No.39	<b>Substances: Tri(1-aziridin)phoshinoxide (TEPA)</b>		
CAS No.545-55-1			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• The textiles which may come in contact with skin of the human body directly	• Intentionally added • Prohibition of the Adhesion in process of manufacture, Mixture,and generation	Banned

No.40	<b>Substances:Hexachlorobenzene</b>		
CAS No. 118-74-1			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All uses	• Intentionally added	Banned

No.41	<b>Substances:Red phosphate</b>		
CAS No. 7723-14-0			
Targets		Criteria/threshold levels	Effective date of the ban on the delivery
Banned Substances	• All except metal	• Intentionally added	Banned
Exemption	• Device Division Related parts		

No.42	<b>Substances:Substances in candidate list for authorization of EU REACH regulation(SVHC)</b>		
See Table 8.2f			
Targets		Criteria/threshold levels	Effective date of the
Controlled Substances	• All uses However, excluding banned substances specified in this standard	• More than 1000ppm (or 0.1wt%) of the materials	

**Table 8.2e Substances in candidate for authorization of EU REACH regulation(SVHC)**

	Substance name	CAS No.
001	Antracene	120-12-7
002	4,4'-Diaminodiphenylmethane	101-77-9
003	Dibutyl phthalate(DBP)	84-74-2
004	Cobalt dichloride	7646-79-9
005	Diarsenic pentaoxide	1303-28-2
006	Darsenic trioxide	1327-53-3
007	Sodium dichromate,dihydrate	7789-12-0 10588-01-9
008	5-tert-butyl-2,4,6-trinitro-m-xylene(muysk xylene)	81-15-2
009	Bis(2-ethyl(hexyl)phthalate) (DEHP)	117-81-7
010	Hexabromocyclododecane(HBCDD)	3194-55-6
011	Alkanes,C10-13.chloro(Short Chain Chlorinated Praffins)	85535-84-8
012	Bis(tributyltin)oxide	56-35-9
013	Lead hydrogen arsenate	7784-40-9
014	Triethyl arsenate	15606-95-8
015	Benzl butyl phthalate(BBP)	85-68-7
016	2,4-Dinitrotoluene	121-14-2
017	Anthracene oil	90640-80-5
018	Anthracene oil,anthracene paste,distnlights	91995-17-4
019	Anthracene oil,anthracene paste,anthracene fraction	91995-15-2
020	Anthracene oil,anthracene-low	90640-82-7
021	Anthracene oil,anthracene paste	90640-81-6
022	Diisobutyl phthalate(DIBP)	84-69-5
023	Lead chromate	7758-97-6
024	Lead chromate molybdate sulfate red(C.I Pigment Red 104)	12656-85-8
025	Lead sulfochromate yellow(C.I Pigment Yellow 34)	1344-37-2
026	Acrylamid	76-06-1
027	Tris(2-chloroethyl)phosphate	115-96-8
028	Coal tar pitch,high temperature	65996-93-2
029	Trichloroethylene	79-01-6
030	Boric acid	10043-35-3
031	Disodium tetraborate,anhydrous	12179-04-3 1330-43-4 1303-96-4
032	Tetraboron disodium heptaoxide,hydrate	12267-73-1
033	Sodium chromate	7775-11-3
034	Potassium chromate	7789-00-6
035	Anmonium dichromate	7789-09-5
036	Potassium dichromate	7778-50-9
037	Cobalt( II )sulphate	10124-43-3
038	Cobalt( II )dinitrate	10141-05-6
039	Coblalt( II ) carbonate	513-79-1
040	Cobalt( II ) diacetate	71-48-7
041	2-Methoxyethanol	109-86-4
042	2-Ethoxyethanol	110-80-5
043	Chromium trioxide	1333-82-0
044	Acids generated from chromium trioxide and their oligomers (Dichromic acid , Oligomers of chromic acid and dichromic acid)	7738-94-5 13530-68-2
045	2-ethoxyethyl acetate	111-15-9
046	Strontium chromate	7789-06-2
047	1,2-Benzendicarboxy and di-C7-11 –branched and linear alkyl esters	68515-42-4
048	hydrazine	7803-57-8 302-01-2
049	1-methyl-2-pyrrolidone	872-50-4
050	1,2,3-trichloropropane	96-18-4

**Table 8.2e Substances in candidate for authorization of EU REACH regulation(SVHC)**

	Substance name	CAS No.
051	1,2-Benzendicarboxylic acid-di-C6-8-branched alkyl esters,C7-rich	71888-89-6
052	Dichromium tris(chromate)	24613-89-6
053	Potassium hydroxyoctaoxodizincatedi-chromate	11103-86-9
054	Pentazinc chromate octahydroxide	49663-84-5
055	Formaldehyde,oligomeric reaction products with aniline	25214-70-4
056	Bis(2-methoxyethyl)phthalat	117-82-8
057	2-Methoxyaniline,o-Anisidine	90-04-0
058	4-(1,1,3,3-tetramethylbutyl)phenol,(4-tert-Octylphenol)	140-66-9
059	1,2-Dichloroethane	107-06-2
060	Bis(2-methoxyethyl)ether	111-96-6
061	Arsenic acid	7778-39-4
062	Calcium arsenate	7778-44-1
063	Trilead diarsenate	3687-31-8
064	N,N-dimethylacetamide[DMAC]	127-19-5
065	2,2'-dichloro-4,4'methylenedianiline[MOCA]	101-14-4
066	Phenolphthalein	77-09-8
067	Lead azide ,Lead diazide	13424-46-9
068	Lead styphnate	15245-44-0
069	Lead dipicrate	6477-64-1
070	Aluminosilicate Refractory Ceramic Fibres[RCF]	-
071	Zirconia Aluminosilicate Refractory Ceramic Fibres[Zr-RCF]	-
072	1,2-bis(2-methoxyethoxy)ethane[TEGDME, triglyme]	112-49-2
073	1,2-dimethoxyethane;ethylene glycol dimethyl ether [EGDME}	110-71-4
074	Diboron trioxide	1303-86-2
075	Formamide	75-12-7
076	Lead(II)bis(methanesulfonate)	17570-76-2
077	TGIC(1,3,5-tris(oxiranylmethyl)-1,3,5-triazine-2,4,6(1H,3H,5H)-trione)	2451-62-9
078	β-TGIC(1,3,5-tris[(2S and 2R)-2,3-epoxypropyl]-1,3,5-triazine-2,4,6-(1H,3H,5H)-trione)	59653-74-6
079	4,4'-bis(dimethylamino)benzophenone(Michler's ketone)	90-94-8
080	N,N,N',N'-tetramethyl-4,4'-methylenedianiline(Michler's base)	101-61-1
081	[4-[4,4'-bis(dimethylamino)benzhydrylidene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride(C.I.Basic Violet3)	548-62-9
082	[4-[4-anilino-1-naphthyl][4-(dimethylamino)phenyl]methylene]cyclohexa-2,5-dien-1-ylidene]dimethylammonium chloride(C.I.Basic Blue 26)	2580-56-5
083	α,α-Bis[4-(dimethylamino)phenyl]-4(phenylamino)naphthalene-1-methanol (C.I. Solvent Blue4)	6786-83-0
084	4,4'-bis(dimethylamino)-4''-(methylamino)trityl alcohol	561-41-1
085	Bis(pentabromophenyl)ether (DecaBDE)	1163-19-5
086	Pentacosafuorotridecanoic acid	72629-94-8
087	Tricosafuorododecanoic acid	307-55-1
088	Henicosafuoroundecanoic acid	2058-94-8
089	Heptacosafuorotetradecanoic acid	376-06-7
090	4(1,1,3,3-tetramethylbutyl)phenol, ethoxylated -covering well-defined substances and UVCB substances, polymers and homologues	-
091	4-Nonylphenol, branched and linear-substances with a linear and/ or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof	-
092	Diazene-1,2-dicarboxamide (C,C'-azodi(formamide))	123-77-3
093	Cyclohexane-1,2-dicarboxylic anhydride (Hexahydrophthalic anhydride-HHPA)	85-42-7
094	Hexahydromethylphthalic anhydride, Hexahydro-4-methylphthalic anhydride, Hexahydro-1-methylphthalic anhydride, Hxahydro-3-methylphthalic anhydride	25550-51-0 19438-60-9 48122-14-1 57110-29-9

**Table 8.2e Substances in candidate for authorization of EU REACH regulation(SVHC)**

	Substance name	CAS No.
095	Methoxy acetic acid	625-45-6
096	1,2-Benzenedicarboxylic acid, dipentylester, branched and linear	84777-06-0
097	Diisopentylphthalate (DIPP)	605-50-5
098	N-pentyl-isopentylphthalate	-
099	1,2-Diethoxyethane	629-14-1
100	N,N-dimethylformamide; dimethyl formamide	68-12-2
101	Dibutyltin dichloride (DBT)	683-18-1
102	Acetic acid, lead salt, basic	51404-69-4
103	Basic lead carbonate (trilead bis(carbonate)dihydroxide)	1319-46-6
104	Lead oxide sulfate(basic lead sulfate)	12036-76-9
105	[Phthalato(2-)]dioxotrilead (dibasic lead phthalate)	69011-06-9
106	Dioxobis(stearato)trilead	12578-12-0
107	Fatty acids, C16-18, lead salts	91031-62-8
108	Lead bis(tetrafluoroborate)	13814-96-5
109	Lead cyanamate	20837-86-9
110	Lead dinitrate	10099-74-8
111	Lead oxide (lead monoxide)	1317-36-8
112	Lead tetroxide(orange lead)	1314-41-6
113	Lead titanium trioxide	12060-00-3
114	Lead Titanium Zirconium Oxide	12626-81-2
115	Pentalead tetraoxide sulphate	12065-90-6
116	Pyrochlore, antimony lead yellow	8012-00-8
117	Silicic acid, barium salt, lead-doped	68784-75-8
118	Silicic acid, lead salt	11120-22-2
119	Sulfurous acid, lead salt, dibasic	62229-08-7
120	Tetraethyllead	78-00-2
121	Tetralead trioxide sulphate	12202-17-4
122	Trilead dioxide phosphonate	12141-20-7
123	Furan	110-00-9
124	Propylene oxide; 1,2-epoxypropane; methyloxirane	75-56-9
125	Diethyl sulphate	64-67-5
126	Dimethyl sulphate	77-78-1
127	3-ethyl-2-methyl-2-(3-methylbutyl)-1,3-oxazolidine	143860-04-2
128	Dinoseb	88-85-7
129	4,4'-methylenedi-o-toluidine	838-88-0
130	4,4'-oxydianiline and it's salt	101-80-4
131	4-Aminoazobenzene; 4-Phenylazoaniline	60-09-3
132	4-methyl-m-phenylenediamine(2,4-toluene-diamine)	95-80-7
133	6-methoxy-m-toluidine(p-cresidine)	120-71-8
134	Biphenyl-4-ylamine	92-67-1
135	o-aminoazotoluene	97-56-3
136	o-Toluidine; 2-Aminotoluene	95-53-4
137	N-methylacetamide	79-16-3
138	1-bromopropane; n-propyl bromide	106-94-5
139	Cadmium	7440-43-9
140	Cadmium oxide	1306-19-0
141	Dipentyl phthalate(DPP)	131-18-0
142	4-Nonylphenol, branched and linear, ethoxylated [substances with a linear and/or branched alkyl chain with a carbon number of 9 covalently bound in position 4 to phenol, ethoxylated covering UVCB -and well-defined substances, polymers and homologues, which include any of the individual isomers and/or combinations thereof]	-

**Table 8.2e Substances in candidate for authorization of EU REACH regulation(SVHC)**

	Substance name	CAS No.
143	Ammonium pnetadecafluorooctanoate (APFO)	3825-26-1
144	Pentadecafluorooctanoic acid (PFOA)	335-67-1
145	Cadmium sulphide	1306-23-6
146	Dihexyl phthalate	84-75-3
147	Disodium 3,3-[[1,1-biphenyl]-4,4-diy[bis(azo)]bis(4-aminonaphthalene-1-sulphonate) (C.I. Direct Red 28)	573-58-0
148	Disodium 4-amino-3-[[4-[2,4-diaminophenyl]azo][1,1-biphenyl]-4-yl]azo]-5-hydroxy-6-(phenylazo)naphthalene-2,7-disulphonate (C.I. Derect Black 38)	1937-37-7
149	Imidazo lidine-2-theone; 2-imidazo line-2-thiol	96-45-7
150	Lead di(acetate)	301-04-2
151	Trixylyl phosphate	25155-23-1
152	1,2-Benzenedicarboxylic acid, dihexyl ester, branched and linear	68515-50-4
153	Cadmium chloride	10108-64-2
154	Sodium perborate; perboric acid, sodium salt	15120-21-5 11138-47-9
155	Sodium peroxometaborate	7632-04-4
156	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol (UV-328)	25973-55-1
157	2-benzotriazol-2-yl-4,6-di-tert-butylphenol (UV-320)	3846-71-7
158	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (DOTE)	15571-58-1
159	Cadmium fluoride	7790-79-6
160	Cadmium sulphate	10124-36-4 31119-53-6
161	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate (reaction mass of DOTE and MOTE)	-
162	1,2-benzenedicarboxylic acid, di-C6-10-alkyl esters; 1,2-benzenedicarboxylic acid, mixed decyl and hexyl and octyl diesters with $\geq 0.3\%$ of dihexyl phthalate (EC No. 201-559-5)	68515-51-5 68648-93-1
163	5-sec-butyl-2-(2,4-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [1], 5-sec-butyl-2-(4,6-dimethylcyclohex-3-en-1-yl)-5-methyl-1,3-dioxane [2] [covering any of the individual isomers of [1] and [2] or any combination thereof]	-
164	1,3-propanesultone	1120-71-4
165	2,4-di-tert-butyl-6-(5-chlorobenzotriazol-2-yl)phenol (UV-327)	3864-99-1
166	2-(2H-benzotriazol-2-yl)-4-(tert-butyl)-6-(sec-butyl)phenol (UV-350)	36437-37-3
167	Nitrobenzene	98-95-3
168	Perfluorononan-1-oic acid (2,2,3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-heptadecafluorononanoic acid and its sodium and ammonium salts)	375-95-1 21049-39-8 4149-60-4
169	Benzo[def]chrysene (Benzo[a]pyrene)	50-32-8
170	4,4'-isopropylidenediphenol (bisphenol A)	80-05-7
171	4-Heptylphenol, branched and linear [substances with a linear and/or branched alkyl chain with a carbon number of 7 covalently bound predominantly in position 4 to phenol, covering also UVCB- and well-defined substances which include any of the individual isomers or a combination thereof]	-
172	Nonadecafluorodecanoic acid (PFDA) and its sodium and ammonium salts	3108-42-7 335-76-2 3830-45-3
173	p-(1,1-dimethylpropyl)phenol	80-46-6

**Table 8.2e Substances in candidate for authorization of EU REACH regulation(SVHC)**

	Substance name	CAS No.
0174	Perfluorohexane-1-sulphonic acid and its salts	355-46-4
0175	Chrysene	218-01-9
0176	Benz[a]anthracene	-
0177	Cadmium nitrate	10325-94-7 10022-68-1 (tetrahydrate)
0178	Cadmium hydroxide	56-55-3
0179	Cadmium carbonate	513-78-0
0180	Dechlorane plus (including any of its individual anti- and syn-isomers or any combination thereof)	13560-89-9 135821-74-8 135821-03-3
0181	Reaction products of 1,3,4-thiadiazolidine-2,5-dithione, formaldehyde and 4-heptylphenol, branched and linear (RP-HP) [with 0.1% w/w 4-heptylphenol, branched and linear]	-

## 9. Regarding the Packaging Components and Materials matters

## (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 suppliers, and are not disposed of by end-users or the

Table 9.1 Regarding the Packaging components and materials matters

Substances: Heavy metals (cadmium, lead, mercury, and hexavalent chromium)			
Articles that satisfy not only the rules specified in Table 8.2, but also the following conditions determined by the regulations of relevant laws			
	Targets	Criteria/threshold levels	Effectiv date of the ban on the delivery
Banned Substances	<ul style="list-style-type: none"> <li>All packaging components and materials as of Table 9.1a</li> </ul>	100ppm (0.01wt%) more of the total-concentration of four heavy metals (cadmium, lead, mercury, and hexavalent chromium) in each part, ink, or paint the constitutes a package that constitutes a package	Banned
Exemption	<ul style="list-style-type: none"> <li>Cartons for returnable boxes owned by carriers or parts suppliers</li> </ul>		
Packaging components and materials are required to be tested in accordance with the following standards.			
For hexavalent chromium:			
<ol style="list-style-type: none"> <li>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.</li> <li>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 limits, analyze and confirm that no hexavalent chromium is present, using the standard methods for detecting hexavalent chromium provided in Table9.1.</li> </ol>			
Standards for four heavy metals measurement			
1. Samplr preparation			
<ul style="list-style-type: none"> <li>For cadmium and lead, follow the methods respectively specified in Table 8.2 (*1)(*2).</li> <li>For total chromium, follow the methods specified in Table 8.2 (*1).</li> <li>For mercury, typical methods are as follows.</li> </ul>			
<ol style="list-style-type: none"> <li>Closed system for acid decomposition method (e.g. a microwave decomposition method) (e.g. IEC 62321-5:2013, EPA 3052:1996)</li> <li>A heating evaporation-cold-vapor mercury-atomic-absorption method</li> <li>A wet decomposition method (e.g. Kjeldahl method) in which a decomposition flask with a reflux condenser is used to decompose mercury by sulfuric acid or nitric acid.</li> </ol>			
Note: In the process of sample preparation, particular attention is required to avoid mercury and precipitates must be completely dissolved by some technical means.			
2. Measurement methods			
<ul style="list-style-type: none"> <li>Regarding the measurement of cadmium, lead, and total-chromium concentrations, follow the methods specified in Table 8.2 (*1)(*2).</li> <li>Regarding the measurement of mercury concentrations, follow the same methods as cadmium and lead specified in Table 8.2 (*1)(*2).</li> <li>When the mercury concentration is predicted to be low, you are advised to use one of the following methods:</li> </ul>			
<ol style="list-style-type: none"> <li>A reduction-evaporation atom-absorption method</li> <li>ICP-OES(ICP-AES) method with a hydride-generation apparatus</li> <li>ICP-MS method with a hydride-generation apparatus</li> </ol>			



Standard methods for detecting hexavalent chromium:

Note: Standard methods specified hereafter are applicable when total concentration of the four elements of cadmium, lead, mercury, and total chromium in packaging 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 7-2:2017, EPA 3060A)

2. Measurement method

•Ultraviolet-Visible (UV/VIS) Spectroscopy (e.g. IEC 62321 7-2:2017, 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, cadmium, and the total chromium

(2) Less than 30 ppm for lead

(\*1) Refer to Standards for measurement in Table 8.2 "Main 'Targets' and 'Effective date of the ban on the delivery' regarding 'Controlled Substances.'"of "Substances: Cadmium and cadmium compounds"

(\*2) Refer to Standards for measurement in Table 8.2 "Main 'Targets' and 'Effective date of the ban on the delivery' regarding 'Controlled Substances.'"of "Substances: Lead and Lead compounds"

**Table 9.1a Illustrative examples 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 company products)		
PACKAGING		
1	Carton (Box)	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 the company such as bar-code label.
14	Joint	Carton joint.
15	Band	Such as PP band.
16	Handing 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	Index card, Index 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	

For physical distribution		
PACKAGING		
1	Pallet	Made from wood, plastic, paper etc. which is used in one-way transportation, 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.

## Major controlled substances, and examples of applicable laws and regulations

Substances or the uses which are banned by applicable laws in each country or area, even if the substances or the uses are not defined in this "Management Standards for the Environment-related Substances of Hirakawa Hewtech Corp.", are to comply with relevant laws and regulations.

The revised edition and appendix should be also referred if there are.

Substances	Laws and regulations (examples)
1.Cadmium and cadmium compounds	European Union. REACH Regulation (EC) No. 1907/2006. European Union. RoHS Directive 2011/65/EU. European Union. Batteries Directive 2006/66/EC. South Korea. Quality Management and Safety Control of Industrial Products Act South Korea. Electrical Appliances Safety Control Act. South Korea. Act on Resource Recycling of Electrical and Electronic Equipment and Vehicles. Denmark: Statutory Order No. 1199.
2.Lead and lead compounds	European Union. RoHS Directive 2011/65/EU. 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 South Korea. Act on Resource Recycling of Electrical and electronic Equipment and Vehicles. Denmark: Statutory Order No. 1012.
3.Mercury and mercury compounds	European Union. RoHS Directive 2011/65/EU. 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) United States. Louisiana State. Mercury Risk Reduction Act. South Korea. Act on Resource Recycling of Electrical and electronic Equipment and Vehicles.
4.Hexavalent chromium compounds	European Union. RoHS Directive 2011/65/EU South Korea. Act on Resource Recycling of Electrical and electronic Equipment and Vehicles.
5.Polybrominated biphenyls (PBB)	European Union. REACH Regulation (EC) No. 1907/2006. Annex XVII. European Union. RoHS Directive 2011/65/EU South Korea. Act on Resource Recycling of Electrical and electronic Equipment and Vehicles.
6.Polybrominated diphenylethers (PBDE)	European Union. REACH Regulation (EC) No. 1907/2006. Annex XVII. European Union. RoHS Directive 2011/65/EU South Korea. Act on Resource Recycling of Electrical and electronic Equipment and Vehicles.
7.Hexabromocyclododecane (HBCDD)	European Union. REACH Regulation (EC) No. 1907/2006.
8.Polychlorinated biphenyls (PCB)	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class1. United States.Polychlorinated Biphenyls(PCBs)Manufacturing, Processing,Distribution in Commerce, and Use Prohibitions(40CFR 761)
9.Polychlorinated naphthalenes (PCN)	Japan. Law Concerning the Examination and Regulation of Manufacture, etc. of Chemical Substances, Class 1.
10.Polychlorinated terphenyls (PCT)	European Union. REACH Regulation (EC) No. 1907/2006.

Substances	Laws and regulations (examples)
11.Short-chain chlorinated paraffins (SCCP)	Norway. Regulations relating to restrictions on the use, etc. of certain dangerous chemicals. European Union. EU POPs Regulation (EC) No. 850/2004.
12.Tris (2-chloroethyl) phosphate (TCEP) Tris(2-chloro-1-methylethyl) phosphate (TCPP), Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)	European Union. REACH Regulation (EC) No. 1907/2006. United States. Vermont State Act. 85
13.Hydrofluorocarbon (HFC), Perfluorocarbon (PFC), Sulfur hexafluoride (SF <sub>6</sub> )	European Union. EU regulation (EC) No. 842/2006. Denmark: Statutory Order No. 552. Switzerland. Ordinance on Risk Reduction related to Chemical Products (ORRChem).
14.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.
15.Hydrochlorofluorocarbons(HCFC)	European Union. EU regulation (EC) No. 1005/2009.
16.Perfluorooctane sulfonates (PFOS)	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
17.perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA	Norway. Product Regulations
18.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.
19.Dibutyltin (DBT) compounds	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
20.Dioctyltin (DOT) compounds	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
21.Beryllium oxide	European Union. WEEE Directive 2002/96/EC and EU Directive 1999/45/EC.
22.Cobalt dichloride	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
23.Diarsenic trioxide, Diarsenic pentaoxide	European Union. REACH Regulation (EC) No. 1907/2006.
24.Bis (2-ethylhexyl) phthalate, Dibutyl phthalate, Benzyl butyl phthalate, Diisobutyl phthalate	European Union. REACH Regulation (EC) No. 1907/2006.
25.Asbestos	Japan. Industrial Safety and Health Law. Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV)
26.Specific azo compounds	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
27.Formaldehyde	Germany. Chemicals Prohibition Ordinance. (German abbreviation: ChemVerbotsV) Denmark: Statutory Order No. 289.
28.Benzenamine,N-phenyl-,reaction products with styrene and 2,4,4-trimethylpentene(BNST)	Prohibition Certain Toxic Substances Regulations.
29.2-benzotriazol-2-yl-4,6-di-tert-butylphenol(UV-320)	Japan. Law Concerning the Examination and Regulation of Manufacture of Chemical Substances, Class1.

Substances	Laws and regulations (examples)
30. Dimethyl fumarate (DMF)	European Union. REACH Regulation (EC) No. 1907/2006.
31. Polycyclic aromatic hydrocarbons (PAHs)	European Union. REACH Regulation (EC) No. 1907/2006 Annex XVII.
32. 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 16 states in the United States. Regulations on Heavy Metals in Packaging Materials.

This information was confirmed as of January 2018.

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.

## Revise resume

Establishment	Established on May 29, 2002
Revision	<b>Ver.2-0 February 12, 2003</b>
	Added Allowance concentration of cadmium and lead " Cadmium and cadmium compound".
	Added A footnote to Table 1 chlorinated paraffin class.
	Deleted Table.2 and raising the number of table.
	Added 4-aminoazobenzene to Table.2
	Modified Table 4 "The main purpose of reducing substance and targets of total eradication".
	Added The allowance concentration and analysis are contained in Lead and packaging
	Added /Pb into "Environment-related substances (Cd) content measured Table".
	<b>Ver.2-1 September 17, 201</b>
	Changed "The time limit of the banned target" to and time limitation of lead contained in an to "the end of February in 2004". also, as and PVC, added " within the range of the observance of the law, with the customer demand is not limited".
	<b>Ver.2-2 September 1, 200</b>
	Overall review.
	Reviewed *Banned substances and banned substances time limit policy.
	Reviewed *Targets substances and investigation method to product.
	Reviewed *Written guarantee concerning material contain
	Added *The measurement control with the
	<b>Ver.2-3 September 1, 2005</b>
	Reviewed as below
	Added *Limit, allowance value, purpose and target to "Impurity".
	Added *Concerning the test methods of Pretreatment and test methods.
	Changed Management method (from company to QMS-office ).
	<b>Ver.2-4 March 1, 2006</b>
	*Changed title.
	<b>Ver.2-4 March 6, 2007</b>
	*As an appendix of "Management Standards for the Environment-related Substances".
	<b>Ver.3.0 April 24, 2008</b>
	Overall *Environment-related substances.
	<b>Ver.4.0 June 1 , 2009</b>
	P2: Purpose
	Changed "Hirakawa Hewtech Corp." to "Hirakawa Hewtech Group"
	P2: Scope of mananement Standard
	(3) Survey on procurement of environment-related
	Added " JAMP "
	P2: 5. Survey on procurement of environment-related Substances and limite.
	Added "(1) Resin for molding such as plastic e.t.c., and metal such as cupper wire e.t.c."
	Added "(10) Batteries"
	P3: Table 8.1 (The Controlled Substances)
	Added " Cobalt Dicloride"

P4 and P6: Standards for measurement

1. Sample operation(1)

Added " e.g. IEC 62321: 2008 "

2. Sample operation(3)

Added " e.g. IEC 62321: 2008 "

P6: Mercury and Mercury compounds

Exemption

Added " LCD backlight panels "

We reviewed notation and made clear that all nses expect the excluded item were banned substances.

P12: Perfluorooctane sulfonates (PFOS)

Added Controlled Substances: Alluses expect Banned substances, the excluded item, from April 1,2010

Added " cobalt dichloride "

P15:

Added [ Document: Relevant laws and regulations]

### **Ver, 5.0 January 5 ,2010**

P3:

Added "Dimethyl fumarate" into 「Table 8.1 (the Controlled Substances)」 "

P12:

Added " No23: Dimethyl fumate "

### **Ver. 6.0 Mav 14, 2010**

P3:

Added "Dibutyltin compounds" into 「Table 8.1 (The Controlled Substances)」

P8 and P16:

Added "No.12: Dibutyltin compounds "

P3:

Added "Diocetyl tin compounds" into 「Table 8.1 (The Controlled Substances)」

P8 and P16:

Added "No.13: Diocetyl tin compounds "

Changed from"Tributyltin compounds and Triphenyltin compouda" to "Trisubstituted organotin compounds(Including tributiltin compounds, triphenyltin compounds)"

P3:

Changed The name in the「Table 8.1 (The Controlled Substances)」

P8:

Changed The name of "No.11"

Added "Metaltin, a tinalloy, tinplating, the inorganic compounds of tin do not correspond"

P16:

Changed The name of "No.11"

It is chanfed tke follows to "the reduction substances" by "application exclusion"

P5: Optical glass of cadmium

P6: The glass which is used in a use listed in the excluded item of lead.

P6: Solder consisting of more than two elements for the connection between the pins and the package of micro processors with a lead content of more 80wt% and less than 85wt%.

P6: Dielectric ceramic in capacitors for a rated voltage of less than 125VAC or 350VDC

P7: Mercury in cold cathode fluorescent lamp (CCFL and EEFL): Shortlength(not over 500mm); 3.5mg or more and less than 5mg per lamp.

P6:

Added crystalgrass as defined in Annex 1(categories 1,2,3 and4) of EU Directive 69/493/EEC]

P7:

Changed Contents of "Exemption" of Mercury.



P10:  
 Added Azodyes that form any of the amine compounds listed in Table 8.2b through the decomposition methods cited in REACH Regulation(EC) No.1907/2006/Anmex X VII and amine compounds in Table 8.2b.

P11: polyvinyl chloride(PVC) and pvcblends  
 Changed " Suction cups for mounting in-vehicle products" to Banned substances by Controlled substances.

P12: "beryllium oxide"  
 Abolished " Special use without the substitution"  
 Changed " All uses " into "Banned Substances"

P13:  
 Abolished " Controlled Substances"  
 Changed All uses except those specified in Exemption.  
 (photographicfilms for professional use and resists for semiconductors)

P16:  
 Review Document: Relevant laws and regulations.

### **Ver. 7.0 May 11, 2011**

Review With a revision of ss-00259 reviewed from P3 to P19.

P3:  
 Added " tris(2,3-brominated propyl)phosphate(TRIS)" into 「Table 8.1 (THE Controlled Substances)」

P4:  
 Added " tri(1-aziridin)phoshinoxide(TEPA)" into 「Table 8.1 (THE Controlled Substances)」

P4:  
 Added "Bisphenol A (BPA) " into 「Table 8.1 (THE Controlled Substances)」

P14:  
 Added " SF6 " into 「Table 8.2c List of ozone layer destruction materials」

### **Ver. 7.1 August 1,2011**

P10: " Dibutyltin (DBT) compounds "  
 Changed " Reduced Substances" to " Banned Substances"  
 Changed " more than 1,000ppm for the tin element of materials" to " contained the tin element more than 1,000ppm for materials"  
 Changed " One-component and two-component room temperature vulcamisation sealants (RTV-1 and RTV-2 seatants)" to " one-component room temperature vucanisation sealant (RTV-2) "

### **Ver, 8.0 May 28, 2012**

Review With a revision of ss-00259 reviews

P4:  
 Based on ss-00259 with "「Table 8.1 (The Controlled Substances)」"  
 Added Bis(2-ethylhexyl)phthalate,Dibutyl phthalate,Diisobutyl phthalate,Benzyl butyl phthalate Di-isononyl phthalate,Di-isodecyl phthalate,Di-n-octyl phthalate,Di-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 wsters, Bis(2-methoxyethyl)phthalate  
 Added "4-(1,1,3,3tetramethylbutyl) phenol, Bis(2-methoxyetyl)ether, N,N-dimethyl acetamide (DMAC)"

P6:  
 " No2: Lead and lead compounds "

Deleted " Reduced Substances "

Deleted " Crystal glass as defined in Annex 1 of EU Directive 69/493/Eec "

Added Note: A solder whose lead content is equal to or less than the threshold level of sloder 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.

- P8: " Mercury and mercury compounds "  
Banned Substances
- Deleted "mercury in cold cathode fluorescent lamps (CCFL) and external electrode fluorescent lamps (EEFL). Short length (not over 500mm.)"
- P10 and No10 and No 14
- P11: " Other brominated organic compounds " and "Other chlorinated organic compounds "  
Controlled Substances  
Divided into " Flame retardants used for printed wiring board laminate" and " Flame retardants of plasticizer contained in plastic parts other than the above.
- P11: No.15: "Trisubstituted organotin compounds"(including tributyltin(TBT) compounds and triphenyltin(TPT)compounds)  
Added When "intentionally added" and a numerical value are shown in "criteria/threshold levels", both of them shall be satisfied.  
No.17: " Dioctyltin(DOT) compounds"
- Changed " Reduced Substances" to " banned Substances "
- P14: No.24: "beryllium copper "  
Criteria/threshold levels  
Changed to " Intentional Added  
No.27:  
Bis(2-ethylhexyl)phthalate,Dibutyl phthalate,Diisobutyl phthalate,Benzyl butyl phthalate  
Controlled Substances  
Criteria/threshold levels  
Changed to "More than 1000ppm (or 0.1wt%) of the parts.
- P15:  
Added No.28:  
Di-isononyl phthalate,Di-isodecyl phthalate,Di-n-octyl phthalate,Di-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
- Added CAS No.71888-89-6, 68515-42-4, 117-82-8
- Added "DIHP, DHNUP,DMEP " into " Table 8.2List of specific phthalates"
- P17: No.32:"Boric acid, specific sodium, borates"  
Criteria/Threshold levels
- Added More than 1000ppm (or 0.1wt%) of the parts
- Added No.35: 4-(1,1,3,3-tetra methylbutyl)phenol.
- Added No.36: Bis(2-methoxyethyl)ether
- Added No.37: N,N-dimethylacetamide(DMAC)
- Ver, 9.0 June 24,2013**
- Review With a revision of SS-00259 reviewed from P4 to P23
- P4: Based on SS-00259 with「Table 8.1( The Controlled Substances)」
- Added Diisopentyl phthalate, "1,2-Benzenedicarboxylic acid dipentylester,branch and linear",  
N-pentyl-isopentyl phthalate, Ethyl GDME)  
Perchlorates  
Hexachlorobenzene
- P5: Substances:Cadmium and cadmium compound  
Banned Substances
- Changed The threshold level of Plastics, paints, Inks and All applications other than the above to 100ppm.
- Added The object of Reduced Substance
- Reviewed "Exemption"

P6:	Substances: lead and lead compounds "Banned Substances"
Delated	Solders, Plating, Steels, Aluminium alloy, Copper alloy, Glass of fluorescent tube "Exemption"
Added	Solders, Plating, Steels, Aluminium alloy, Copper alloy, Glass of fluorescent tube
P8:	
Changed	Thereshold level of Mercury and mercury compounds, Hexavalent chromium compounds, Polychlorinated biphenyls to more than 1000ppm.
P10,P11:	
Changed	Thereshold level of Polybrominated biphenyl, Polybrominated diphenyl eters(including decabromodiphenyl ster) to more than 1000ppm.
	Substances: hexabromocyclododecane Banned Substances
Changed	Effective data of the ban on delivery from January 1, 2014
P14:	Substances: Specific benzotriazole Banned Substances
Changed	"All uses"
P15:	Substances: Bis(2-ethyl hexyl)phthalate, Dibutylphthalate, benzyl butylphthalate, Diisobutylphthalate Reduced Substances
Changed	For the item of the reduction material, delivery prohibition time added from December 1, 2013 to the part used for a product except the electronic equipment, the part that the time when delivery was prohibited in the additive to materials was used for electronic equipment from June 1, 2013, the additive to materials.
Delated	"Controlled Substances"
Added	"Exemption"
P16:	
Added	"Diisopentylphthalate, 1,2-Benzenedicarboxylic acid, dipentylester, branch and linear N-pentyl isopentyl phthalate " into Table 8.2c Lisit of Specific phthalate.
P19:	Controlled Substances
Added	Etylene glycol dimethyl ester, Perchlorales. Banned Substances
Added	Hgexachlorobenzene
P22:	Documents
Reviewed	The following laws and regulations into "Major controlled ssubstances and examples of applicable laws and regulations
Added	Cadmium and cadmium compounds, Lead and lead compoundds,Hexavalent chromium compounds, Polybrominated biphnyls(PBB), Polybrominated diphenylsters: 「South Korea.ACT on Resouce Recycling of Electrical and electronic Equipmant and Vehcle」
Added	Mercury and mercury compounds 「United States. Mercury Risk Reduction ACT」
Added	Polychlorinated bisphenyls(PCB),Polychlorinated naphtalenes(PCN),Polychlorinated terphenyls(PCT):「United States.Polychlorinated bisphenyls(PCBs) Manufacturing, Processing, Distribution inCommerces and Use Prohibitions(40CFR 761)」
P23:	
Added	Bis(2-ethylhexyl)phthalate, Dibutyl phthalate, Benzyl butyl phthalate,Diisobutyl phthalate 「Denmark:Statutory Order No.1113」

Ver, 10.0	June 4,2014
Review	With a revision of SS-00259 reviewed from P4 to P24
P4,P10	
Added	Tris(2-chloro-1-methylethyl)phosphate(TCPP),Tris(1,3-dichloro-2-propyl)phosphate(TDCPP)
P4,P11	
Added	Sulfur hexafluoride(SF6)
P4,P12	
Added	Perfluorooctanoic acid(PFOA) and individual salts and esters of PFOA
P4,P15	
Added	Dipentyl phthalate
P4,P17	
Added	Polycyclic aromatic hydrocarbons(PAHs)
P5,P18	
Added	Trixylyl phosphats(TXP)
Ver, 11.0	July 27,2015
Review	With a revision of SS-00259 reviewed from P2 to P27
P5,P13	
Added	Hydrochlorofluorocarbons(HCFC)
P5,P14	
Added	2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate(DOTE)
P5,P14	
Added	Reaction mass of 2-ethylhexyl 10-ethyl-4,4-dioctyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate and 2-ethylhexyl 10-ethyl-4-[[2-[(2-ethylhexyl)oxy]-2-oxoethyl]thio]-4-octyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate(reaction mass of DOTE and MOTE)
P5,P18	
Added	Benzenamine,N-phenyl-,reaction products with styrene and 2,4,4-trimethylpentene (BNST)
P5,P18	
Added	2-benzotriazol-2-yl-4,6-di-tert-butylphenol(UV-320)
P5,P18	
Added	2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol(UV-328)

Ver, 12.0 May 30,2017  
Review With a revision of SS-00259(15th edition) reviewed from P5 to P30  
P6,P19  
Added Red phosphate  
P6,P20  
Added Substances in candidate list for authorization of EU REACH regulation(SVHC)

Delated No.38 2-(2H-benzotriazol-2-yl)-4,6-ditertpentylphenol(UV-328)  
No.41 Boric acid,specific sodium borates  
No.42 4-(1,1,3,3tetramethylbutyl)phenol  
No.43 Bis(2-methoxyethyl)ether  
No.44 N,N-dimethylacetamide(DMAC)  
No.45 Ethylene glycol dimethyl ether (EGDME)  
No.46 Trixylyl phosphate(TXP)  
No.49 Bisphenol A (BPA)

Ver, 13.0 July 5,2018  
Review With a revision of SS-00259(16th edition) reviewed from P5 to P30  
P23  
Added Substances in candidate list for authorization of EU REACH regulation(SVHC)  
Listed up to the 18th in SVHC of EU REACH regulation