

Chemical Substance Control Level Classification Table (Ver. 8)

Use of Level 1 Prohibited Substances: Table 1-1

Chemical substances whose use is prohibited under domestic or international laws and regulations, or per customer requests

Threshold Value: Table 1-1

Concentration level that is guaranteed in materials delivered by suppliers to USHIO as well as USHIO products shipped

Control Value: Table 1-2

The content concentration that cannot be exceeded unless the chemical substance is intentionally used or mixed in as well as the concentration level that needs to be controlled by USHIO and its suppliers

When the content concentration as impurities of prohibited substances exceeds the control value, USHIO will request reanalysis, an explanation of the reason and reduction in content concentration to a level below the control value.

Use of Level 2 Restricted Substances: Table 2

Chemical substances contained in products whose use will be prohibited based on deadlines specified under domestic or international laws and regulations, or per customer requests

Level 3 Controlled Substances: Table 3

Chemical substances whose use is controlled and which are not prohibited or restricted at the present time

Additional clause

1. There may be cases when the value in the specifications, drawings, etc., exceeds the reference value specified in this standard. In such cases, the values specified in the specifications, drawings, etc., take precedence.
2. This standard is based on JIG-101. USHIO further added chemical substances and threshold values based on social circumstances that include customer requests, SVHC of REACH regulation and other substances.
3. (*S) sign is put on SVHC of the REACH regulation.

Revision History

No.	Date of	Details of revisions
Ver. 6	Apr. 2012	<p><Level 1 Prohibited Substances></p> <ul style="list-style-type: none"> - In accordance with revised REACH Annex XVII Restriction, 3 additional substances (No. 20-22) were included in Table 1-1. Because TBTO, TBTs and TPTs (former Version 10 and 16) are types of Tri-substituted organostannic compounds in No. 20, they were included as such. - Reflected the revision details of EU RoHS in the exempt use of Table 1-1 No. 3: Lead - Revised the threshold level of Table 1-1 No. 1: Cadmium
Ver. 7	Dec. 2014	<p><Level 1 Prohibited Substances> (Table 1-1)</p> <ul style="list-style-type: none"> - Chemical substances added <ul style="list-style-type: none"> 1-23. Perfluorooctanoic acid (PFOA) (from Level 2 to Level 1); 1-24. Tris phosphates (TCEP, TCPP, TDCPP) (from Level 3 to Level 1); 1-25. Phthalates (DEHP, DBP, BBP, DIBP) (from Level 3 to Level 1); 1-26. Hexabromocyclododecane (HBCDD) (from Level 3 to Level 1) - Changes <ul style="list-style-type: none"> 1-8. Scope of application 2 added to 1-8. Polychlorinated biphenyls (PCBs). 1-14. Exempted items (paint and ink) added to 1-14. Vinyl chloride polymer (PVC). <p><Level 2 Restricted Substances> (Table 2)</p> <p>PFOA is deleted because it was added to the Level 1 prohibited substances.</p> <p><Level 3 Restricted Substances> (Table 3)</p> <ul style="list-style-type: none"> - Chemical substances added <ul style="list-style-type: none"> 3-29. Mirex, 3-30. Polycyclic aromatic hydrocarbons (PAH), 3-31. Chlorinated flame retardants - Chemical substances deleted <ul style="list-style-type: none"> Chemical substances added to Level 1 have been deleted.
Ver. 8	Apr. 2016	<p><Level 1 Prohibited Substances> (Table 1-1)</p> <ul style="list-style-type: none"> - Chemical substances added <ul style="list-style-type: none"> 1-27. Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST); 1-28. Polycyclic aromatic hydrocarbons (PAH) (from Level 3 to Level 1); 1-29. Red phosphorus - Changes <ul style="list-style-type: none"> 1-9. Chlorine number changed from 3 to 2 for polychlorinated naphthalene. - Expired exempted items deleted <ul style="list-style-type: none"> Expired exempted items 1-3. lead and its compounds, 1-15. PFOS, POFAF and 1-21. DBT were deleted <p><Level 3 Restricted Substances> (Table 3)</p> <ul style="list-style-type: none"> 3-31. Hexachlorobutadiene added

Table 1-1: Use of Level 1 Prohibited Substances

1-1. Cadmium and Cadmium Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Cadmium	7440-43-9	Colorants, anti-corrosion surface treatment, batteries, contacts, optical materials, PVC stabilizer
Cadmium oxide	1306-19-0	
Cadmium sulfide	1306-23-6	
Cadmium chloride	10108-64-2	
Cadmium sulfate	10124-36-4	
<p>Scope of application—Not to be used if applicable to any of the following:</p> <ol style="list-style-type: none"> 1. Intentionally added 2. Content that exceeds 100ppm as impurities 3. Inclusion of more than 75 ppm when used for surface treatment, coloring agent, or plastic stabilizer in product not subject to the RoHS Directive. 4. Use of cadmium for packaging materials in which the total content of cadmium, mercury, hexavalent chromium and lead exceeds 100ppm <p><Exempted items> Can be used if applicable to any of the following: *Cadmium and cadmium compounds and cadmium plating used in electrical contacts *Cadmium used in optical glass and filter glass</p>		
Reference laws and regulations: RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006		
1-2. Hexavalent Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Sodium dichromate	10588-01-9	Colorants, coating materials, inks, catalysts, anti-corrosion surface treatment, dyes, anti-corrosion
Chromium trioxide	1333-82-0	
Calcium chromate	13765-19-0	
Lead (II) chromate (*S)	7758-97-6	
Potassium bichromate	7778-50-9	
Potassium chromate	7789-00-6	
Sodium dichromate, dihydrate (*S)	7789-12-0	
<p>Scope of application—Not to be used if applicable to any of the following:</p> <ol style="list-style-type: none"> 1. Intentionally added 2. Content that exceeds 1000ppm as impurities 3. Use of hexavalent chromium for packaging materials in which the total content of cadmium, mercury, hexavalent chromium and lead exceeds 100ppm <p><Exempted items> Can be used if applicable to any of the following: Hexavalent chromium as an anti-corrosion material for a carbon steel cooling system in absorption refrigerators.</p>		
Reference laws and regulations: RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006		

1-3. Lead and Lead Compounds

Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Lead	7439-92-1	Colorants, coating materials, rubber curing agent, plastic stabilizer, batteries, rubber vulcanizing agent, solder, glass, free-cutting alloy material, alloy element, resin additive
Lead (II) carbonate	598-63-0	
Lead (IV) oxide	1309-60-0	
Lead (II, IV) oxide	1314-41-6	
Lead (II) sulfide	1314-87-0	
Lead (II) oxide	1317-36-8	
Lead (II) carbonate basic	1319-46-6	
Lead hydroxidcarbonate	1344-36-1	
Lead (II) sulfate	7446-14-2	
Lead (II) phosphate	7446-27-7	
Lead (II) chromate	7758-97-6	
Lead (II) titanate	12060-00-3	
Lead sulfate	15739-80-7	
Tribasic lead sulphate	12202-17-4	
Lead stearate	1072-35-1	
Dibasic lead stearate	56189-09-4	
Lead hydrogen arsenate (*S)	7784-40-9	

Scope of application—Not to be used if applicable to any of the following:

1. Intentionally added
2. Content that exceeds 300ppm as impurities
[Application area and material]
*Plastic resin (including rubber, films)
*Coating material, ink, colorant, dye
*PVC resin coating in PVC electrical cable
3. Content that exceeds 1000ppm as impurities
[Application area and material]
*Area and material other than 2 above
4. Use of lead for packaging materials in which the total content of cadmium, mercury, hexavalent chromium and lead exceeds 100ppm
5. Lead content exceeds 0.4% in terms of the cumulative weight for use in batteries and accumulator batteries

<Exempted items>

Can be used if applicable to any of the following:

- *Glass used in cathode-ray tubes (CRT), electronic parts and fluorescent tubes
- *Lead as an alloy element in steel materials containing less than 0.35% by weight, copper alloy containing 4% or less of lead by weight, and aluminum materials containing 0.4% or less of lead by weight
- *Lead contained in high-melting point solder (lead alloy containing over 85% of lead by weight)
- *Lead contained in solder for servers, storage, storage array systems, and network infrastructure equipment for switching, signaling and transmission, as well as network management for telecommunications
- *Lead contained in electronic ceramic parts (e.g. piezoelectric devices)
- *Lead contained in bearing shells and bearing bushes for lead bronze bearings
- *Lead in compliant pin connector system
- *Lead as coating material for thermal conduction module C-rings
- *Lead contained in optical and filter glass
- *Lead contained in solder consisting of more than two elements for connecting pins and microprocessor packages with a lead content of more than 80% and less than 85% by weight in proportion to the tin-lead content
- *Lead contained in solder for completing a viable electrical connection between semiconductor dies and carriers in flip chip IC packages

- *7(c)-I Electrical and electronic components 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
- *7(c)-II Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher

Note: 7(c)-I,II are the exempt use numbers of EU RoHS Directive.

Reference laws and regulations: RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006

1-4. Mercury and Mercury Compounds

Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Mercury	7439-97-6	Batteries, fluorescent materials, contacts, thermometers, colorants
Mercury chloride (II)	7487-94-7	

Scope of application—Not to be used if applicable to any of the following:

1. Intentionally added
2. Content that exceeds 1000ppm as impurities
3. Use of mercury for packaging materials in which the total content of cadmium, mercury, hexavalent chromium and lead exceeds 100ppm
4. Mercury used in batteries exceeding 5ppm and mercury used in button cell batteries exceeding 2%

<Exempted items>

Can be used if applicable to any of the following:

- *Mercury in compact fluorescent lamp not exceeding 5mg per lamp
- *Mercury in straight fluorescent lamps for general purposes not exceeding the following thresholds:
 - Halophosphate (halogenoid phosphate) 10mg
 - Triphosphate with a normal lifetime 5mg
 - Triphosphate with a long lifetime 8mg
- *Mercury in straight fluorescent lamps for special purposes
- *Mercury in lamps not defined in this document

Reference laws and regulations: RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006

1-5. Polybrominated Biphenyls (PBBs)

Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Decabromobiphenyl	13654-09-6	Flame retardant
3,3',4,4' - bromobiphenyl	77102-82-0	
2,2',4,5,5' - bromobiphenyl	67888-96-4	

Scope of application—Not to be used if applicable to any of the following:

1. Intentionally added
2. Content that exceeds 1000ppm as impurities

Reference laws and regulations: RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006

1-6. Polybrominated Diphenyl ethers (PBDEs)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Pentabromodiphenyl ether	32534-81-9	Flame retardant
Octabromodiphenyl ether	32536-52-0	
Decabromodiphenyl ether	1163-19-5	
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added 2. Content that exceeds 1000ppm as impurities		
Reference laws and regulations: RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006		
1-7. Asbestos		
Substance name	CAS No.	Application or use
Asbestos	1332-21-4	Electric insulator, filler, adiabatic material, friction material
Actinolite	77536-66-4	
Amosite	12172-73-5	
Anthophyllite	77536-67-5	
Chrysotile	12001-29-5	
Crocidolite	12001-28-4	
Tremolite	77536-68-6	
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added		
1-8. Polychlorinated Biphenyls (PCBs)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
PCB (Polychlorinated Biphenyls)	1336-36-3	Insulating oil, lubricant, electrical insulating medium, plasticizers, coating solvent, heating medium
Pentachlorobiphenyls	25429-29-2	
PCT (Polychlorinated terphenyls)	61788-33-8	
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added 2. In such cases it is unintentionally produced in such manufacturing process, if there is a content in excess of material per 50ppm.		
1-9. Polychloronaphthalenes (more than 2 chlorine atoms)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Polychloronaphthalenes (more than 2 chlorine atoms)	70776-03-3	Lubricant, coating material, plastic stabilizer, electrical insulating medium, flame retardant
Pentachloronaphthalene	1321-64-8	
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added		
Reference laws and regulations: POPs Regulation (Stockholm Convention on Persistent Organic Pollutants); to be added to Class I Specified Chemical Substances of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (October 2016)		

1-10. Shortchain Chlorinated Paraffins		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Chlorinated Paraffins (C10-13) (*S)	85535-84-8	Flame retardant, PVC plasticizer
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added However, polyvinyl chloride (PVC) should be separately treated as a substance to be controlled and not included in chlorinated paraffin.		
1-11. Azocolorants and Azodyes (Certain Amines)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Azocolorants and azodyes forming certain amines	-	Pigments, dyes, coloring agents, condenser mold
biphenyl-4-ylamine	92-67-1	
Benzidine	92-87-5	
4-chloro-o-toluidine	95-69-2	
2-naphthylamine	91-59-8	
4,4'- Diaminodiphenylmethane (*S)	101-77-9	
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added < Exempted items > Can be used if applicable to any of the following: *Use in places where the substance does not come into direct contact with the skin or mouth for an extended period of time (e.g. packaging materials)		
1-12. Ozone Depleting Substances		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Substances specified under annexes of the Montreal Protocol		Cooling medium, flame extinguisher, foaming agent, detergent, fumigation
Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added < Exempted items > Can be used if applicable to any of the following: *Use of methyl bromide in halogen lamps, as defined in Annex E, Group I		
1-13. Formaldehyde		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Formaldehyde (monomer); formalin	50-00-0	Antiseptics
Scope of application—Not to be used if applicable to any of the following: 1. Plastic resin or fiber content that exceeds 75ppm 2. Wood products such as fiber board or laminated wood in which the substance exceeds 0.1ppm according to the chamber method		

1-14. Polyvinyl Chloride (PVC)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Polyvinyl chloride (PVC)	9002-86-2	Vinyl chloride resin, packaging materials, insulating materials
<p>Scope of application—Not to be used if applicable to any of the following: 1. Intentionally added in packaging materials (bag, tape, bonding band, etc.), cases, heat shrink tubing <Exempted items> Can be used if applicable to any of the following: * Except for the above-mentioned cases, use of such items as paints, inks, rod coverings and insulating caps (condensers, switches, fuses, etc.) are to be controlled. (Partially added in Ver. 7)</p>		
1-15. Perfluorooctane sulfonate (PFOS) and its salt, and Perfluorooctane sulfonate fluoride(PFOSF)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Perfluorooctane sulfonate	1763-23-1	Photolithography, photocopying materials, hydraulic fluid, metal plating, cleaning materials, fire-fighting foams, and coating materials for
Perfluorooctane sulfonate fluoride	307-35-7	
Lithium heptadecafluorooctanesulphonate	29457-72-5	
Potassium	2795-39-3	
Ammonium nonadecafluoronanesulphonate	17202-41-4	
<p>1. Scope of application: Intentionally added <Exempted items> Can be used if applicable to any of the following: (i) Photoresist or anti-mirror coating for photolithography process (ii) Photo coating applied to films, documents, or printing plates</p>		

1-16. Fluorinated greenhouse gases (PFC, SF6, HFC)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Carbon tetrafluoride (perfluoromethane)	75-73-0	Fluorinated greenhouse gases (PFC, SF6, HFC)
Perfluoroethane (hexafluoroethane)	76-16-4	
Perfluoropropane (octafluoropropane)	76-19-7	
Perfluorobutane (decafluorobutane)	355-25-9	
Perfluoropentane (dodecafluorobutane)	678-26-2	
Perfluorohexane (tetradecafluorohexane)	355-42-0	
Perfluorocyclobutane	115-25-3	
Sulfur hexafluoride (SF6)	2551-62-4	
Trifluoromethane - (HFC-23)	75-46-7	
Difluoromethane (HFC-32)	75-10-5	
Methyl fluoride- (HFC-41)	593-53-3	
2H,3H-Decafluoropentane (HFC-43-10mee)	138495-42-8	
Pentafluoroethane (HFC-125)	354-33-6	
1,1,2,2-Tetrafluoroethane (HFC-134)	359-35-3	
1,1,1,2-Tetrafluoroethane - (HFC-134a)	811-97-2	
1,1-Difluoroethane -(HFC-152a)	75-37-6	
1,1,2-Trifluoroethane -(HFC-143)	430-66-0	
1,1,1-Trifluoroethane -(HFC-143a)	420-46-2	
2H-Heptafluoropropane -(HFC-227ea)	431-89-0	
1,1,1,2,2,3-Hexafluoropropane (HFC-236cb)	677-56-5	
1,1,1,2,3,3-Hexafluoropropane (HFC-236ea)	431-63-0	
1,1,1,3,3,3-Hexafluoropropane (HFC-236fa)	690-39-1	
1,1,2,2,3-Pentafluoropropane (HFC-245ca)	679-86-7	
1,1,1,3,3-Pentafluoropropane (HFC-245fa)	460-73-1	
1,1,1,3,3-Pentafluorobutane (HFC-365mfc)	406-58-6	
Tetrafluoromethane (Perfluoromethane)	75-73-0	
Scope of application: 1. Intentionally added		
1-17. 2-(2'-Hydroxy-3',5'-di-tert-butylphenyl)benzotriazole (Other name: Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl))		
Target chemical substances	CAS No.	Application or use
2-(2'-Hydroxy-3',5'-di-tert-butylphenyl)-2H-benzotriazole	3846-71-7	Adhesive agents, paints, printing ink, plastics, ink ribbons, putties, caulking, filling materials (ultraviolet light
Scope of application: 1. Intentionally added Note : "Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)" indicated JIG is the same substance as "2-(2'-Hydroxy-3',5'-di-tert-butylphenyl)benzotriazole" indicated in Chemical		
1-18. Dimethyl fumarate (DMF)		
Target chemical substances	CAS No.	Application or use
Dimethyl fumarate (DMF)	624-49-7	Moisture prevention agents, mildew-proofing agents
Scope of application: 1. Intentionally added Note Other name: Fumaric acid dimethyl		

1-19. Hexachlorobenzene		
Target chemical substances	CAS No.	Application or use
Hexachlorobenzene	118-74-1	Sterilizer, mildew-proofing agents, Stain-proofing agent, Synthetic medium
Scope of application: 1. Intentionally added		
1-20. Tri-substituted organostannic compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Bis(tri-n-butyltin) oxide (*S) (TBTO)	56-35-9	Coating materials, colorants, antiseptics, cooling medium, foaming agent
Triphenyl Tin=N, -dimethyldithiocarbamate	1803-12-9	Antibacterial and antifungal agents, paint, pigment
Triphenyltinfluoride	379-52-2	
Triphenyltinacetate	900-95-8	
Triphenyltinchloride	639-58-7	
Tributyltinacetate	56-36-0	
Bis(tributyltin)fumalate	6454-35-9	
Tributyltin laurate	3090-36-6	
Trioctyltin chloride	2587-76-0	
Trimethyltin hydroxide	994-32-1	
Trimethyltin chloride	994-31-0	
Scope of application: If any of the following cases applies, the use of chemical substances is prohibited. (1) Intentional use (2) Inclusion of more than 1,000 ppm as impurity in packaging items Note1: A tri-substituted organostannic compound refers to a tin compound that has three organic substituents, such as tributyltin (TBT) compounds and triphenyltin (TPT) compounds. Note2: Concentration of tin mass after conversion into metal		
1-21. Dibutyltin (DBT) compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Dibutyltin oxide	818-08-6	Plasticizers, paper coatings, inks, stabilizer for PVC, curing catalyst for silicone resin and urethane resin,
Dibutyltin diacetate	1067-33-0	
Dibutyltin dilaurate	77-58-7	
Dibutyltin maleate	78-04-6	
Scope of application: If the following case applies, the use of chemical substances is prohibited. (1) Inclusion of more than 1,000 ppm in homogeneous materials Note: Concentration of tin mass after conversion into metal		

1-22. Dioctyltin (DOT) compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Dioctyltin oxide	870-08-6	Stabilizer for PVC, curing catalysts for silicone resin and
Dioctyltin dilaurate	3648-18-8	
<p>Scope of application: If the following case applies, the use of chemical substances is prohibited. (1) Inclusion of more than 1,000 ppm in homogeneous materials in the following items: (i) Textile and (natural and/or man-made) leather articles intended to come into contact with the skin (ii) Childcare articles (iii) Two-component room temperature vulcanisation moulding kits (RTV-2 moulding kits) Note: Concentration of tin mass after conversion into metal</p>		
1-23. Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA		Added from Ver. 7
Target chemical substances	CAS No.	Application or use
Perfluorooctanoic acid (PFOA)	335-67-1	Photolithography, photo-coating materials, hydraulic fluid, metal plating, cleaning materials, fire-fighting foams, coating materials for paper, and plastic stabilizers.
Ammonium pentadecafluorooctanoate (APFO)	3825-26-1	
Sodium salt of Perfluorooctanoic acid	335-95-5	
Potassium salt of Perfluorooctanoic acid	2395-00-8	
Silver(1+) salt of Perfluorooctanoic acid	335-93-3	
Perfluorooctanoyl fluoride	335-66-0	
Methyl perfluorooctanoate	376-27-2	
Ethyl perfluorooctanoate	3108-24-5	
<p>Scope of application: If the following case applies, the use of chemical substances is prohibited. (1) Inclusion of more than 1,000 ppm in homogeneous materials (2) Inclusion of more than 10 ppm in chemicals (3) Inclusion of more than 1µg/m² in fibers, carpets and other coated products</p>		
Reference laws and regulations: Norwegian laws and regulations		
1-24. Tris phosphate(TCEP,TCPP,TDCPP)		Added from Ver. 7
Target chemical substances	CAS No.	Application or use
Tris(2-chloroethyl)phosphate(TCEP) (*S)	115-96-8	Flame retardants used in lastics, resins, fabrics, and textiles
Tris(1-chloro-2-propyl)phosphate(TCPP)	13674-84-5	
Tris(1,3-dichloro-2-propyl)phosphate(TDCPP)	13674-87-8	
<p>Scope of application: If the following case applies, the use of chemical substances is prohibited. (1) Inclusion of more than 1,000 ppm in homogeneous materials</p>		
*Reference laws and regulations: United States. Vermont State. Act 85		
Reference laws and regulations: Flame retardants regulation of Vermont state in the United States		

1-25. Phthalate ester		Added from Ver. 7
Target chemical substances	CAS No.	Application or use
Bis (2-ethylhexyl) phthalate (DEHP) (*S)	117-81-7	Plasticizers, dyes,colorants, coating materials, inks,adhesives, choke coil,tube,trans
Dibutylphthalate (DBP) (*S)	84-74-2	
Butyl benzyl phthalate (*S)	85-68-7	
Diisobutyl phthalate(DIBP) (*S)	84-69-5	
Scope of application: If both of the following cases applies, the use of chemical substances is prohibited. (1) Inclusion of more than 1,000 ppm in homogeneous materials (2) Parts for indoor. or Parts that may contact the skin or mucous membranes.		
Reference laws and regulations: Regulation of phthalates in Denmark, RoHS Directive 2011/65/EC, REACH regulation No. 1907/2006		
1-26. Hexabromocyclododecane(HBCDD)		Added from Ver. 7
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Hexabromocyclododecane (*S)	25637-99-4	Flame retardant, solder
	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		
1,2,5,6,9,10-hexabromocyclododecane (HBCD) (*S)	3194-55-6	
α -hexabromocyclododecane (*S)	134237-50-6	
β -hexabromocyclododecane (*S)	134237-51-7	
γ -hexabromocyclododecane (*S)	134237-52-8	
Scope of application: If the following case applies, the use of chemical substances is prohibited. (1) Intentionally added (2) Inclusion of more than 1,000 ppm in homogeneous materials		
Reference laws and regulations: POPs Regulation (Stockholm Convention on Persistent Organic Pollutants), Class I Specified Chemical Substances of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.		
1-27. Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)		Added from Ver. 8
Target chemical substances	CAS No.	Application or use
Benzenamine, N-phenyl-, reaction products with styrene and 2,4,4-trimethylpentene (BNST)	68921-45-9	Rubber and lubricant additives (antioxidants), lubricants, grease, etc.
Scope of application: 1. Intentionally added <Exempted items> Can be used if applicable to any of the following conditions: - Additives for rubber except tires		
Reference laws and regulations: Canada's Prohibition of Certain Toxic Substances Regulations 2012 SOR/2012-285 (Canadian Environmental Protection Act 1999)		

1-28. Polycyclic aromatic hydrocarbon (PAH)		Added from Ver. 8
Target chemical substances	CAS No.	Application or use
Benzo[a]pyrene (BaP)	50-32-8	Pigments contained in rubber, plasticizers and plastics (adulterants) - Sporting goods such as bicycles, golf clubs and racquets - Home-use products, trolleys (home-use wagons), walkers - Home-use tools - Clothing, shoes, gloves and sportswear - Watch straps, wristbands, masks, hair bands
Benzo[e]pyrene (BeP)	192-97-2	
Benzo[a]anthracene (BaA)	56-55-3	
Chrysene (CHR)	218-01-9	
Benzo[b]fluoranthene (BbFA)	205-99-2	
Benzo[j]fluoranthene (BjFA)	205-82-3	
Benzo[k]fluoranthene (BkFA)	207-08-9	
Dibenz[a,j]anthracene (DBAhA)	53-70-3	
Scope of application—Not to be used if applicable to any of the following: - REACH target 1. Content that exceeds 1 ppm in molded products supplied to the general public such as rubber or plastic component parts with direct contact and long-term or repeated short-term contact with human skin or mouth 2. Content that exceeds 0.5 ppm in toys, including intellectual training toys, as well as nursery items such as rubber or plastic component parts with direct contact and long-term or repeated short-term contact with human skin or mouth		
Reference laws and regulations: REACH regulation No. 1907/2006 Annex XVII Market launch and usage restriction		

Table 2 Level 2 Restricted Substances

No chemicals corresponding to this level.

Table 3 Level 3 Controlled Substances

3-1. Antimony and Antimony Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Antimony	7440-36-0	Colorants, coating materials, flame retardant, flame retardant aid, stabilizers
Antimony trichloride	10025-91-9	
Antimony trioxide	1309-64-4	
Antimony pentoxide	1314-60-9	
Sodium antimonate	15432-85-6	
Scope of application: 1. Content that exceeds 1000ppm		
3-2. Arsenic and Arsenic Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Arsenic	7440-38-2	Semiconductor basal plate, glass antifoaming agent, colorants, coating materials, flame retardant
Gallium arsenide	1303-00-0	
Arsenic pentoxide (*S)	1303-28-2	
Arsenic trioxide (*S)	1327-53-3	
Triethyl arsenate (*S)	15606-95-8	
Scope of application: 1. Content that exceeds 1000ppm		
3-3. Beryllium and Beryllium Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Beryllium	7440-41-7	Metal alloys, ceramic materials
Beryllium oxide	1304-56-9	
Scope of application: 1. Content that exceeds 1000ppm		
3-4. Bismuth and Bismuth Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Bismuth	7440-69-9	Semiconductors, metal alloys, solder materials
Bismuth trioxide	1304-76-3	
Bismuth nitrate	10361-44-1	
Scope of application: 1. Content that exceeds 1000ppm		

3-5. Nickel and Nickel Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Nickel	7440-02-0	Colorants, batteries, surface treatment, electrodes, nickel coatings, metal alloys
Nickel (II) oxide	1313-99-1	
Nickel (II) carbonate	3333-67-3	
Nickel (II) sulfate	7786-81-4	
Scope of application: 1. Content that exceeds 1000ppm, except for metal alloys (e.g. stainless, etc.)		
3-6. Selenium and Selenium Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Selenium	7782-49-2	Photo conductor, pigments, glass coloring agents, semiconductors, photocells
Selenious acid	7783-00-8	
Scope of application: 1. Content that exceeds 1000ppm		
3-7. Brominated Flame Retardants		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
3,5,3',5'-tetrabromobisphenol A (TBBPA)	79-94-7	Flame retardant
TBBA- (2,3-dibromopropyl ether)	21850-44-2	
TBBA Bis-(2-hydroxyethyl ether)	4162-45-2	
1,2,5,6,9,10-hexabromocyclododecane(HBCD) (*S)	3194-55-6	
Hexabromocyclododecane (HBCDD) (*S)	25637-99-4	
2,3-dibromopropanol	96-13-9	
Decabromodiphenylethane	84852-53-9	
Scope of application: 1. Content that exceeds 1000ppm; however, this condition does not apply to polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs), which are restricted substances.		
3-8. Phthalate ester		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Dibutylphthalate (DBP) (*S)	84-74-2	Plasticizers, dyes,colorants, coating materials, inks,adhesives, choke coil,tube,trans
Bis (2-ethylhexyl) phthalate (DEHP) (*S)	117-81-7	
Butyl benzyl phthalate (*S)	85-68-7	
Diisononyl phthalate	28553-12-0 68515-48-0	
Diisodecyl phthalate	26761-40-0 68515-49-1	
Di-n-octyl phthalate (DNOP)	117-84-0	
Diisobutyl phthalate(DIBP) (*S)	84-69-5	
Scope of application: 1. Content that exceeds 1000ppm Resin comprised mainly of phthalate ester is not included as phthalate ester (e.g. aromatic polyester, etc.)		

3-9. Radioactive substances		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Uranium	—	Optical glass and lenses, scintillation counter
Plutonium	—	
Thorium	—	
Cesium	7440-46-2	
Strontium	7440-24-6	
Scope of application: 1. Content that exceeds 1000ppm		
3-10. Magnesium and Magnesium Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Magnesium	7439-95-4	Metal alloys, optical materials, optical thin film material, structural material, aluminum alloy(duralumin), magnesium alloys, fatty acid salt
Magnesium oxide	1309-48-4	
Other Copper Compounds	—	
Scope of application: 1. Content that exceeds 1000ppm		
3-11. Copper and Copper Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Copper	7440-50-8	Lead wire,Terminal,Alloy such as brass
Other Copper Compounds	—	
Scope of application: 1. Content that exceeds 1000ppm		
3-12. Gold and Gold Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Gold	7440-57-5	Plating
Other Gold Compounds	—	
Scope of application: 1. Content that exceeds 1000ppm		
3-13. Palladium and Palladium Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Palladium	7440-05-3	Electronic parts
Other Palladium Compounds	—	
Scope of application: 1. Content that exceeds 1000ppm		

3-14. Silver and Silver Compounds		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Silver	7440-22-4	Solder,Plating
Other Silver Compounds	—	
Scope of application: 1. Content that exceeds 1000ppm		
3-15. Perchlorates		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Lithium perchlorate	7791-03-9	Coin-cell batteries
Scope of application: 1. Content that exceeds 0.006ppm		
3-16. Anthracene		
Target chemical substances	CAS No.	Application or use
Anthracene (*S)	120-12-7	Fireworks raw material, Anthraquinone raw material (inferiority), Carbon black raw material, Wood preservation,mothballs
Scope of application: 1. Content that exceeds 1000ppm		
3-17. Cobalt chloride (CoCl ₂)		
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Cobalt chloride or Cobalt(II) dichloride (*S)	7646-79-9	Desiccant indicator
Cobalt(II) chloride hexahydrate	7791-13-1	
Cobalt(III) chloride	10241-04-0	
Cobalt chloride	34240-80-7	
Scope of application: 1. The substance is contained as an indicator in a drying agent.		
3-18. 5-tert-butyl-2,4,6-trinitro-m-xylene(musk xylene)		
Target chemical substances	CAS No.	Application or use
5-tert-butyl-2,4,6-trinitro-m-xylene (*S) (musk xylene)	81-15-2	Fragrant materials
Scope of application: 1. Content that exceeds 1000ppm		

3-19. Anthracene oil		
Target chemical substances	CAS No.	Application or use
Anthracene oil (*S)	90640-80-5	The substances are mainly used in the manufacture of other substances such as anthracene and carbon black. They may also be used as reducing agents in blast furnaces, as components in bunker fuel, for impregnating, sealing and corrosion protection.
Anthracene oil, anthracene paste, distn. lights (*S)	91995-17-4	
Anthracene oil, anthracene paste, anthracene fraction (*S)	91995-15-2	
Anthracene oil, anthracene-low (*S)	90640-82-7	
Anthracene oil, anthracene paste (*S)	90640-81-6	
Scope of application: 1. Content that exceeds 1000ppm		
3-20. Coal tar pitch, high temperature		
Target chemical substances	CAS No.	Application or use
Coal tar pitch, high temperature (*S)	65996-93-2	Pitch, coal tar, high temp. is mainly used in the production of electrodes for industrial applications. Smaller volumes are dedicated to specific uses such as heavy duty corrosion protection, special purpose paving, manufacture of other substances and the production of clay targets.
Scope of application: 1. Content that exceeds 1000ppm		
3-21. Refractory Ceramic Fibres		
Target chemical substances	JAMP SN*	Application or use
Aluminosilicate, Refractory Ceramic Fibres (*S)	JAMP-SN0007	Refractory ceramic fibres are used for high-temperature insulation, almost exclusively in industrial applications (insulation of industrial furnaces and equipment, equipment for the automotive and aircraft/aerospace industry) and in fire protection (buildings and industrial process equipment).
Zirconia Aluminosilicate, Refractory Ceramic Fibres (*S)	JAMP-SN0055	
Scope of application: 1. Content that exceeds 1000ppm Note: (a) Aluminosilicate, Refractory Ceramic Fibres Al ₂ O ₃ and SiO ₂ are present within the following concentration ranges: - Al ₂ O ₃ : 43.5 - 47 % w/w, and SiO ₂ : 49.5 – 53.5 % w/w, or - Al ₂ O ₃ : 45.5 – 50.5 % w/w, and SiO ₂ : 48.5 – 54 % w/w (b) Zirconia Aluminosilicate, Refractory Ceramic Fibres Al ₂ O ₃ , SiO ₂ and ZrO ₂ are present within the following concentration ranges: - Al ₂ O ₃ : 35 - 36 % w/w, SiO ₂ : 47.5 – 50 % w/w, and ZrO ₂ : 15 – 17 % w/w (c) Fibres have a length weighted geometric mean diameter less two standard geometric errors of 6 or less micrometres (µm)		
*JAMP SN(Substance Number) is substituted because there is no CAS number in this chemical.		

3-22. 2,4-Dinitrotoluene		
Target chemical substances	CAS No.	Application or use
2,4-Dinitrotoluene (*S)	121-14-2	2,4-dinitrotoluene is used in the production of toluene diisocyanate, which is used for the manufacture of flexible polyurethane foams. The substance is also used as gelatinizing-plasticizing agent for the manufacture of explosives.
Scope of application: 1. Content that exceeds 1000ppm		
3-23. Lead chromate molybdate sulphate red (C.I. Pigment Red 104)		
Target chemical substances	CAS No.	Application or use
Lead chromate molybdate sulphate red (*S) (C.I. Pigment Red 104)	12656-85-8	Lead chromate molybdate sulphate red (C.I. Pigment Red 104) is used as a colouring, painting and coating agent in sectors such as the rubber, plastic and paints, coatings and varnishes industries. Applications comprise the production of agricultural equipment, vehicles and aircraft as well as road and airstrip painting.
Scope of application: 1. Content that exceeds 1000ppm		
3-24. Lead sulfochromate yellow (C.I. Pigment Yellow 34)		
Target chemical substances	CAS No.	Application or use
Lead sulfochromate yellow (*S) (C.I. Pigment Yellow 34)	1344-37-2	Lead sulfochromate yellow (C.I. Pigment Yellow 34) is used as a colouring, painting and coating agent in sectors such as the rubber, plastic and paints, coatings and varnishes industries. Applications comprise the production of agricultural equipment, vehicles and aircraft as well as road and airstrip painting. The substance is further used for camouflage or ammunition marking in the defence area.
Scope of application: 1. Content that exceeds 1000ppm		

3-25. Cyanide compounds

Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Barium cyanide	542-62-1	Colorants, coating materials, Plating, plastics raw material, plating processing agent
Barium tetracyanoplatinate	562-81-2	
Cyanogen bromide	506-68-3	
Calcium cyanide	592-01-8	
Copper (I) cyanide	544-92-3	
Copper (II) cyanide	14763-77-0	
Copper cyanide	4367-08-2	
Hydrogen cyanide	74-90-8	
Lead() dicyanide	592-05-2	
Mercury dicyanide	592-04-1	
Nickel cyanide	557-19-7	
Potassium cyanide	151-50-8	
Potassium dicyanoaurate	13967-50-5	
Potassium cobalt cyanide	13963-58-1	
Potassium dicyanocuprate	13682-73-0	
Dipotassium tetracyano mercurate	591-89-9	
Potassium nickel cyanide	39049-81-5	
Silver cyanide	506-64-9	
Sodium cyanide	143-33-9	
Sodium copper cyanide	14264-31-4	
Zinc cyanide	557-21-1	
Scope of application: 1. Intentionally added		

3-26. Pentachlorophenol

Target chemical substances	CAS No.	Application or use
Pentachlorophenol	87-86-5	Insecticide, general agricultural chemicals, (The medium is included.)
Scope of application: 1. Intentionally added		

3-27. Benzene

Target chemical substances	CAS No.	Application or use
Benzene	71-43-2	Solvent, cleaning agent, synthetic medium
Scope of application: 1. Intentionally added		

3-28. 1,1,2-Trichloroethane		
Target chemical substances	CAS No.	Application or use
1,1,2-Trichloroethane	79-00-5	Solvent, cleaning agent, lubricant, synthesis medium, fat and oil, wax
Scope of application: 1. Intentionally added		
3-29. Mirex		Added from Ver. 7
Target chemical substances	CAS No.	Application or use
Mirex	2385-85-5	Insecticide, Insect repellent
Scope of application: 1. Intentionally added		
Reference laws and regulations: POPs Regulation (Stockholm Convention on Persistent Organic Pollutants), Class I Specified Chemical Substances of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.		
3-31. Chlorinated flame retardants		Added from Ver. 7
Examples (Typical examples of target chemical substances)	CAS No.	Application or use
Tetrakis(2-chloroethyl)dichloroisopentyldiphosphate	38051-10-4	Frame retardants
Tris(1-chloro-2-propyl)phosphate	13674-84-5	
Tris(2,3-dichloro-1-propyl)phosphate	66108-37-0	
Other Chlorinated flame retardants	-	
Scope of application: 1. Intentionally added		
Reference laws and regulations: U.S. Industry Standard JS709 (Low halogen definition)		
3-31. Hexachlorobutadiene		Added from Ver. 8
Target chemical substances	CAS No.	Application or use
Hexachlorobutadiene	87-68-3	Solvent
Scope of application: 1. Intentionally added		
Reference laws and regulations: POPs Regulation (Stockholm Convention on Persistent Organic Pollutants), Class I Specified Chemical Substances of the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.		

Note: For “level 3 Controlled Substances”, please report if the content even contain less than 1000ppm is known.

Note: Please confirm the Chemical Substance for SVHC of REACH regulation with ECHA (European Chemicals Agency) or JAMP (Joint Article Management Promotion-consortium).

ECHA: Candidate list of SVHC http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp

JAMP: Declarable Substances Reference List <http://www.jamp-info.com/list>

Table 1-2

Control Value: The content concentration that cannot be exceeded unless the chemical substance is intentionally used or mixed in as well as the concentration level that needs to be controlled by USHIO and its suppliers

When the content concentration as impurities of prohibited substances exceeds the control value, USHIO will request reanalysis, an explanation of the reason and reduction in content concentration to a level below the control value.

Control Value										Threshold Value Ref. Table 1-1
	1) Plastic resin (including rubber, film)	2) Coating materials, inks, pigments, dyes	3) Lead-free solders, (bar solder, wire solder, resin flux-cored solder) except flow soldering section	4) Flow soldering (solder flow bath)	5) Electroless nickel plating	6) Metal materials other than lead-free solder.	7) Chromated parts and materials	8) Polyvinyl chloride (PVC) undercoati ng	9) Materials other than those mentioned	All materials
Cadmium and Cadmium Compounds	20 ppm	20 ppm	20 ppm	20 ppm	-	-	-	-	75 ppm	75 ppm
Hexavalent Chromium Compounds	-	-	-	-	-	-	100 ppm	-	1000 ppm	1000 ppm
Lead and Lead Compounds	100 ppm	100 ppm	500 ppm	800 ppm	800 ppm	500 ppm	-	300ppm	1000 ppm	1000 ppm (except 1), 2), and 8), which are 300ppm)
Mercury and Mercury Compounds	-	-	-	-	-	-	-	-	1000 ppm	1000 ppm
Polybrominated Biphenyls (PBBs)	100 ppm	-	-	-	-	-	-	-	1000 ppm	1000 ppm
Polybrominated Diphenyls ethers (PBDEs)	100 ppm	-	-	-	-	-	-	-	1000 pm	1000 ppm

- Packaging materials: Not permitted when the gross weight of cadmium, mercury, hexavalent and lead exceeds 1000ppm
- Refer to Table 1-1 “Use of Level 1 Prohibited Substances” for exempted items.
- For “-”, chemical substances are to be controlled according to the threshold value.