

【 NIDEC SANKYO Environmental Substances Control Standards 】

Revision 8. 1



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*Japanese version is the official text.

NIDEC SANKYO CORPORATION

1. Stance in environmental substance control

Nidec Sankyo establish the following standards to manage the parts, raw materials, auxiliary materials, packaging materials used in the products as well as auxiliary materials used in manufacturing processes, which are subject to the Environmental Substances Control.

1) Selection criteria in environmental substances

- (1) Chemicals that are prohibited or restricted by Japanese laws and regulations, EU Laws or industry guidance (Note 1) because of their high probabilities in harmful effects to humans due to cumulative, insoluble or carcinogenic properties.

Note 1) EU Laws: RoHS, ELV, EU2037(Montreal Protocol), 94/62/EC(packaging and packaging waste)
REACH_Annex X VII

Japanese Laws: Pollutant Release and Transfer Register laws (PRTR), Kyoto Protocol
Law Concerning the Examination and Regulation of Manufacture_etc of
Chemical Substances (Kashinhou)

Industry guidance: Japan Green Procurement Survey Standardization Initiative
_Joint Industry Guide)

- (2) Substances regulated by Green Procurement standards of companies, or substances which we need to regulate.

We take priority on external demands such as from customers and add the substances individually when our standards cannot satisfy them.

2) Regulation classifications and definitions of environmental substances

- (1) Prohibition : Substances whose use has been prohibited immediately.

① Substances prohibited in products__RoHS substances

: Substances specified by EU_RoHS

② Substances prohibited in products__Other prohibited substances

: Substances restricted by EU Laws, Japanese Laws or industry guidance.

③ Substances prohibited in products__Halogen free substances

: Substances restricted in certain industries

④ Substances in manufacturing processes

: Substances restricted by EU Laws, Japanese Law or industry guidance

- (2) Restriction : Substances whose inclusion in products are planned for reduction and monitored until finally eliminated.

① Substances restricted in products: Substances restricted by Japanese Laws or industry guidance

3) Units to measure the content ratio of environmental substances

- (1) Measure the weight ratio of each homogeneous material (Note 2) in parts composed of multiple materials.

If a part cannot be separated into homogeneous materials mechanically, use the separable minimum unit to calculate the weight ratio.

Note 2) Homogeneous material__Minimum unit of material with no bias in element and density

- (2) Examples of unit of measure

① Electrical cable: Insulation, printing ink on insulation, core wire and & plating on the core wire

② Electrolytic capacitor: Terminals, separator, electrolytic solution, tape to fasten element & others

③ Plated steel plate: Base material, surface plating(plating, chromate treatment, coating and other)

2. Substances prohibited in Products__RoHS substances

1) Substance List

No	Substance Name	CAS No																					
	Restriction condition, threshold value	usages/materials for restriction																					
		Main laws																					
1	Cadmium and Cadmium compounds	7440-43-9 etc.																					
	Resin(notes): intentional content prohibition, or impurities content < 5ppm Other materials : intentional content prohibition, or impurities content <75ppm	All usages, All materials																					
	<Exemptions> Cadmium plating except for methods prohibited by 91/338/EEC	RoHS, PRTR																					
2	Lead and Lead compounds	7439-92-1 etc.																					
	Resin(notes): intentional content prohibition, or impurities content <100ppm Solder : intentional content prohibition, or impurities content <500ppm Solder in flow/dip tank, Solder used to connect PWB, parts, etc : impurities content <800ppm Other materials : intentional content prohibition, or impurities content <1000ppm	All usages, All materials																					
	<Exemptions> The following list of exceptions and the usage specified by RoHS_appendix	RoHS, PRTR																					
	<table border="1"> <thead> <tr> <th>Usage/ material</th> <th colspan="3">Alloy</th> <th>electronic</th> <th>Glass material of optic/filter</th> <th>High melting point tin</th> </tr> <tr> <td></td> <th>Aluminum</th> <th>steel</th> <th>Copper alloy</th> <th>Ceramic parts</th> <th>fluorescent tube, electronic component</th> <th>/lead solder</th> </tr> </thead> <tbody> <tr> <td>allowance</td> <td>< 0.4%</td> <td>< 0.35%</td> <td>< 4%</td> <td></td> <td>No restriction</td> <td>> 85%</td> </tr> </tbody> </table>	Usage/ material	Alloy			electronic	Glass material of optic/filter	High melting point tin		Aluminum	steel	Copper alloy	Ceramic parts	fluorescent tube, electronic component	/lead solder	allowance	< 0.4%	< 0.35%	< 4%		No restriction	> 85%	
Usage/ material	Alloy			electronic	Glass material of optic/filter	High melting point tin																	
	Aluminum	steel	Copper alloy	Ceramic parts	fluorescent tube, electronic component	/lead solder																	
allowance	< 0.4%	< 0.35%	< 4%		No restriction	> 85%																	
3	mercury and mercury compounds	7439-97-6 etc.																					
	All materials : intentional content prohibition, or impurities content <1000ppm	All usages, All materials																					
	<Exemptions> Mercury in compact fluorescent lamp of less than 5mg/pc, and mercury in straight fluorescent lamp, lamp	RoHS, PRTR																					
4	Hexavalent chromium compounds	7789-00-6 etc.																					
	All materials : intentional content prohibition, or impurities content <1000ppm	All usages, All materials																					
	<Exemptions> Hexavalent chromium as anti-corrosion of the carbon steel used in the cooling system of absorption refrigerators.	RoHS, PRTR																					
※	Heavy metal 4 substances (Cd, Pb, Hg, Cr6) contained in packaging material	—																					
	Heavy metal Four substances total value < 100ppm (Whether intended inclusion or impurities)	Packaging materials for products specified by customer standards																					
		94/62/EC																					
5	Polybrominated biphenyls (PBB)	67774-32-7 etc.																					
	All materials : intentional content prohibition, or impurities content <1000ppm	All usages, All materials																					
		RoHS																					
6	Polybrominated diphenyl Ether (PBDE)	1163-19-5 etc.																					
	All materials : intentional content prohibition, or impurities content <1000ppm	All usages, All materials																					
		RoHS																					

Notes) Definition of resin__ High polymer based fiber, film, adhesive tape, molded products, synthetic rubber, adhesives, plant material plastics & coatings, ink.

2) Analysis method of Cadmium, Lead and Mercury

Analysis method should be used that ensures quantitative lower limit of Cadmium is <5 ppm, Lead <30 ppm.

(1) Pretreatment of Analysis sample

Cadmium(Cd)

- Ashing in the presence of sulfuric acid.(e.g. IEC62321:2008)
- Pressurized acid digestion in sealed vessel. [Microwave assisted acid digestion. (e.g. EN13346:2000, EPA3052:1996, IEC62321:2008)]
- Acid digestion with nitric acid, hydrogen peroxide or hydrochloric acid. (e.g. EPA 3050B Rev. 2: 1996)
- Wet digestion with sulfuric acid, nitric acid or hydrogen peroxide. (e.g. BS EN 1122: 2001) etc

Lead(Pb)

- Ashing in the presence of sulfuric acid.(e.g. IEC62321:2008)
- Pressurized acid digestion in sealed vessel. [Microwave assisted acid digestion. (e.g. EN13346:2000, EPA3052:1996, IEC62321:2008)]
- Acid digestion with nitric acid, hydrogen peroxide or hydrochloric acid. (e.g. EPA 3050B Rev. 2: 1996)
- Wet digestion with nitric acid or hydrogen peroxide. etc

Mercury(Hg)

- A heating evaporation-cold-vapor mercury-atomic-absorption method(e.g. IEC62321:2008)
- Wet digestion in which decomposition flask with a reflux condenser is used to decompose mercury by sulfuric acid or nitric acid.(Kjeldahl method) etc

If one of the above digestion gives any precipitant, solubilize completely with another method. (e.g. alkaline digestion)

(2) Recommended analysis method

- Inductively Coupled Plasma-Atomic Emission Spectrometer (ICP-AES), Inductively Coupled Plasma-Mass Spectrometer (ICP-MS) (e.g. IEC62321:2008)
- Atomic Absorption Spectrometer (AAS)

3) Analysis method of Hexavalent Chromium

(1) Pretreatment of Analysis sample

- Hot water extraction method
- extraction method etc

(2) Recommended Analysis method

- Diphenylcarbazide absorptiometric method

4) Analysis method of PBB/PBDE

(1) Pretreatment of Analysis sample

- After crash the test piece, extract PBB/PBDE by Soxhlet extraction method using appropriate organic solvent etc

(2) Recommended Analysis method

- Gas chromatography-mass spectrometry(GC/MS)

5) Update of precise analytical data of substance designated by RoHS

(1) In case of material changes, material maker changes, process modifications or uncertainty of materials included, obtain the latest and accurate analysis data from the suppliers or makers.

(2) At the request of outside sources like customers obtain the latest data from the supplier or maker for each specified year.

3. Substances prohibited in Products__Other Prohibited Substances

1) Substance List

No	Substance Name		CAS No
	Restriction condition, threshold value	usages/materials for restriction	Main laws
1	Polychlorinated biphenyls (PCB)		1336-36-3 etc
	All materials : intentional content prohibited	All usages, All materials	PRTR, Kashinhou
2	Polychlorinated triphenyl (PCT)		61788-33-8 etc.
	All materials : intentional content prohibited	All usages, All materials	—
3	Polychlorinated naphthalenes (PCN)		1321-65-9 etc.
	All materials : intentional content prohibited	All usages, All materials	Kashinhou
4	Chlorinated paraffins (CP)		85535-84-8 etc.
	All materials : intentional content prohibited	All usages, All materials	—
5	Tri-substituted organostannic compounds (TBT, TPT, TBTO etc.)		1803-12-9 etc.
	All materials : intentional content prohibited	All usages, All materials	PRTR
6	Asbestos		1332-21-4 etc.
	All materials : intentional content prohibited	All usages, All materials	PRTR
7	Specific Azo compounds *Azo dyes and pigments that compose specific amines		92-67-1 etc.
	All materials : intentional content prohibited	Materials that come in contact to skin continuously	—
8	Formaldehyde (Formalin)		50-00-0
	Aerial concentration: Less than 0.1ppm (chemG) Aerial concentration : Less than 0.15mg/m3(Formalin act)	All usages, All materials	PRTR
9	Polyvinyl chloride (PVC)		9002-86-2
	All materials : intentional content prohibited	material of product specified by customer standard	—
10	Radioactive elements		7440-46-2 etc.
	All materials : intentional content prohibited	All usages, All materials	—
11	Perfluorooctane sulfonates (PFOS)		1763-23-1 etc.
	All materials : intentional content prohibited	All usages, All materials	—
	<Exemptions> Photoresist for photolithography processes or reflection-prevention coating materials Photo-coating materials for printing originals on film or paper		
12	Specified benzotriazole 2-(2H-1,2,3-benzotriazole-2-yl)-4,6-di-tert-butylphenol		3846-71-7
	All materials : intentional content prohibited	All usages, All materials	Kashinhou
13	Beryllium oxide		1304-56-9
	All materials : intentional content prohibited	All usages, All materials	PRTR
14	Hydrofluorocarbon (HFC)		354-33-6 etc.
	All materials : intentional content prohibited	All usages, All materials	Kyoto Protocol
15	Perfluorocarbon (PFC)		375-72-4 etc.
	All materials : intentional content prohibited	All usages, All materials	Kyoto Protocol
16	Ozone Depleting Substances (CFCs, HCFCs, HBFCs etc)		—
	All materials : intentional content prohibited	All usages, All materials	EU2037
17	Dimethyl Fumarate (DMF)		624-49-7
	All materials : intentional content prohibited	All usages, All materials	-
18	Dibutyltin (DBT) compounds (※1)		75113-37-0 etc.
	Intentional content prohibition, or impurities content <1000ppm(tin concentration)	All usages, All materials	REACH_ANNEX X VII
	<Exemptions>•One-component and two-component room temperature vulcanisation sealants (RTV-1 and RTV-2 sealants) and adhesives •Paints and coatings containing DBT compounds as catalysts when applied on articles •Soft polyvinyl chloride (PVC) profiles whether by themselves or coextruded with hard PVC •Fabrics coated with PVC containing DBT compounds as stabilisers when intended for outdoor applications •outdoor rainwater pipes, gutters and fittings, as well as covering material for roofing and façades		
19	Diocetyl tin (DOT) compounds		3542-36-7 etc.
	Intentional content prohibition, or impurities content <1000ppm(tin concentration)	•Textile articles intended to come into contact with the skin •Two-component room temperature vulcanisation moulding kits (RTV-2 moulding kits)	REACH_ANNEX X VII

※1 Exemption of dibutyltin compounds are planning to deragate to 2014/07/01

Calculate to tin concentratoin by $\frac{\text{tin weight}}{\text{homogeneous material weight}} \times 100 \times 10000$ (ppm).

2)Analysis method of Other Prohibited Substances

(1)Analyze formaldehyde based on 'JIS A1901' _ small chamber method.

(2)The chemical analyses of other prohibited substances are unnecessary and to be confirmed by the element composition table or MSDS of the material.

At the request of outside sources like customers obtain chemical analyses from the supplier or maker.

4. Substances prohibited in Products Halogen free Substances

- 1) Range of restriction object : Product of Personal Computer and equipment related to Personal Computer and Lens Actuator in a cellular phone.
 *Packaging materials are off the subject.
- 2) Materials for restriction : All materials except metal, glass, and ceramic
 *Restricted materials also include the resin materials used for surface treatment for metal and ceramic surface and the solders

3) Substance List

No	Substance Name		CAS No
	Restriction condition, threshold value	usages/materials for restriction	Main laws
1	Chlorine (Cl element)		7782-50-5
	Materials for restriction used for FPC < 700ppm Other materials for restriction < 630ppm	based on Mark 1) 2)	—
2	Bromine (Br element)		7726-95-6
	Materials for restriction used for FPC < 700ppm Other materials for restriction < 630ppm	based on Mark 1) 2)	—
※	Total of Chlorine and Bromine		—
	All materials < 1000ppm	based on Mark 1) 2)	—
3	Antimony trioxide		1309-64-4
	All materials < 1000ppm	based on Mark 1) 2)	PRTR
4	Red phosphorus		7723-14-0
	All materials < 1000ppm	based on Mark 1) 2)	—

4) Analysis method of Halogen free Substances

(1) Chlorine, Bromine

- Analyze based on EN14582__Ion exchange chromatography using a combustion chamber.

(2) Antimony trioxide, Red phosphorus

- The chemical analyses of Halogen free substances are unnecessary and to be confirmed by the element composition table or MSDS of the material.
- At the request of outside sources like customers obtain chemical analyses from the supplier or maker.

5. Substances restricted in Products

1) Substances List

No	Substance Name	CAS No.	Main laws	Main usages
1	Other organochlorine compounds	—	—	Flame retardants of resin etc.
2	Other organobromine compounds	—	—	Flame retardants of resin etc.
3	Nickel and Nickel compounds	7440-02-0 etc.	PRTR	Pigments, Optical film material etc.
4	Arsenic and Arsenic compounds	7440-38-2 etc.	PRTR	Bleaching of glass, Dyes etc.
5	Perfluorooctanoic acid (PFOA)	335-67-1 etc.	—	Supplementary agent of fluorine polymerization body etc.
6	Antimony and Antimony compounds (except Antimony trioxide)	7440-36-0 etc.	PRTR	Dyes, pigments, flame retardants etc.
7	Selenium and Selenium compounds	7782-49-2 etc.	PRTR	Exposure body, Paints, Catalyst etc.
8	Beryllium and Beryllium compounds (except Beryllium oxide)	7440-41-7 etc.	PRTR	Raw material of ceramic, J240Catalyst etc.
9	Phthalate ester	131-11-3 etc.	—	Plasticizer, Dyes, pigments etc.
10	Bismuth and Bismuth compounds	7440-69-9 etc.	—	Solder material etc.

2) Analysis method of Substances restricted in Products

(1)The chemical analyses of substances restricted in products are unnecessary and to be confirmed by the element composition table or MSDS of the material.

(2)At the request of outside sources like customers obtain chemical analyses from the supplier or maker.

6. Substances prohibited in Manufacturing Process

1) Substances List

No	Substance Name	CAS No.	Main laws	Content of restriction
1	CFCs (Specific)	75-69-4 etc.	EU2037	In-house process :Don't use by the manufacturing process.
2	Methyl bromide	74-83-9	PRTR, EU2037	
3	1,1,1-Trichloroethane	71-55-6	PRTR, EU2037	
4	Carbon tetrachloride (Tetrachloromethane)	56-23-5	PRTR, Kashinhou, EU2037	
5	1,2-Dichloroethane	107-06-2	PRTR	
6	1,2-Dichloroethylene	156-59-2	PRTR	
7	Trichloroethylene	79-01-6	PRTR, Kashinhou	
8	Dichloromethane (Methylene chloride)	75-09-2	PRTR	
9	Tetrachloroethylene	127-18-4	PRTR, Kashinhou	
10	HCFCs (CFC Alternatives)	75-45-6 etc.	EU2037	
11	Halon-1211, 1301, 2402	353-59-3	PRTR, EU2037	
12	Chloroform (Trichloromethane)	67-66-3	PRTR	
13	1,1-Dichloroethylene	75-35-4	PRTR	
14	1,1,2-Trichloroethane	79-00-5	PRTR	
15	HBFCs (Bromodifluoromethane etc.)	1511-62-2 etc.	EU2037	
16	Bromochloromethane	74-97-5	EU2037	

2) Analysis method of substances prohibited to use

(1)The chemical analyses of substances restricted in products are unnecessary and to be confirmed by the element composition table or MSDS of the material.

(2)At the request of outside sources like customers obtain chemical analyses from the supplier or maker.

7. Details of Environmental Substances

1) Substances prohibited in Products__RoHS substances

Substance	Chemical formula	CAS No.	Metal conversion factor
(1) Cadmium and Cadmium compounds			
*All substances containing cadmium or cadmium compounds come under prohibited substances			
Cadmium	Cd	7440-43-9	1.000
Cadmium oxide	CdO	1306-19-0	0.875
Cadmium sulfide	CdS	1306-23-6	0.778
Cadmium chloride	CdCl ₂	10108-64-2	0.613
Cadmium sulfate	CdSO ₄	10124-36-4	0.539
Cadmium Nitrate	Cd(NO ₃) ₂	10325-94-7	0.475
Cadmium carbonate	CdCO ₃	513-78-0	0.652
Cadmium Selenide	CdSe	1306-24-7	0.587
Cadmium Telluride	CdTe	1306-25-8	0.468
Cadmium Hydroxide	Cd(OH) ₂	21041-95-2	0.768
Cadmium Stearate	Cd(C ₁₇ H ₃₅ COO) ₂	2223-93-0	0.165
Other Cadmium compounds	-	-	-
(2) Lead and Lead compounds			
*All substances containing lead or lead compounds come under prohibited substances			
Lead	Pb	7439-92-1	1.000
Lead(II) carbonate	PbCO ₃	598-63-0	0.775
Lead(IV) oxide	PbO ₂	1309-60-0	0.866
Lead(II,IV) oxide	Pb ₃ O ₄	1314-41-6	0.907
Lead(II) sulfide	PbS	1314-87-0	0.866
Lead(II) oxide	PbO	1317-36-8	0.928
Lead(II) carbonate basic	2PbCO ₃ ·Pb(OH) ₂	1319-46-6	0.801
Lead hydroxidcarbonate	2PbCO ₃ ·Pb(OH) ₂	1344-36-1	0.801
Lead(II) sulfate	PbSO ₄	7446-14-2	0.683
Lead(II) phosphate	Pb ₃ (PO ₄) ₂	7446-27-7	0.766
Lead(II) chromate	PbCrO ₄	7758-97-6	0.641
Lead(II) titanate	PbTiO ₃	12060-00-3	0.686
Lead sulfate, sulphuric acid, lead salt	PbXSO ₄	15739-80-7	1.000
Lead sulphate,tribasic	Pb ₄ O ₃ (SO ₄)	12202-17-4	0.852
Lead stearate	Pb(C ₁₇ H ₃₅ COO) ₂	1072-35-1	0.268
Lead stearate,dibasic	2PbO·Pb(C ₁₇ H ₃₅ COO) ₂	56189-09-4	0.410
Lead acetate	Pb(CH ₃ COO) ₂	301-04-2	0.637
Lead zcetate(II),trihydrate	Pb(CH ₃ COO) ₂	6080-56-4	0.546
Lead selenide	PbSe	12069-00-0	0.724
Lead(II) zirconate	PbZrO ₃	12060-01-4	0.598
Lead Hydroxide	Pb(OH) ₂	1311-11-1	0.859
Lead(II) nitrate	Pb(NO ₃) ₂	10099-74-8	0.626
Other Lead compounds	-	-	-
(3) Mercury and Mercury compounds			
*All substances containing mercury or mercury compounds come under prohibited substances			
Mercury	Hg	7439-97-6	1.000
Mercury(II) chloride	HgCl ₂	7487-94-7	0.739
Mercury(II) oxide	HgO	21908-53-2	0.926
Mercuric sulfate	HgSO ₄	7783-35-9	0.676
Mercuric nitrate	Hg(NO ₃) ₂	10045-94-0	0.681
Mercuric sulfide	HgS	1344-48-5	0.862
Mercurous oxide	Hg ₂ O	15829-53-5	0.962
Dimethyl mercury	(CH ₃) ₂ Hg	593-74-8	0.870
Mercury chloride	Hg ₂ Cl ₂	10112-91-1	0.850
Other Mercury compounds	-	-	-

Substance	Chemical formula	CAS No.	Metal conversion factor
(4) Chromium (VI) compounds			
*Only substances containing hexavalent chromium compounds come under prohibited substances Chromium metals, chromium alloys, chromium plating leaving no hexavalent chromium residue on plated surfaces, and trivalent chromium compounds do not come under this category.			
Sodium dichromate	Na ₂ Cr ₂ O ₇	10588-01-9	0.397
Chromium(VI) oxide	CrO ₃	1333-82-0	0.520
Calcium chromate	CaCrO ₄	13765-19-0	0.333
Lead(II) chromate	PbCrO ₄	7758-97-6	0.161
Potassium dichromate	K ₂ Cr ₂ O ₇	7778-50-9	0.353
Potassium chromate	K ₂ CrO ₄	7789-00-6	0.268
Barium chromate	BaCrO ₄	10294-40-3	0.205
Sodium chromate	Na ₂ CrO ₄	7775-11-3	0.321
Strontium chromate	SrCrO ₄	7789-06-2	0.255
Zink chromate	ZnCrO ₄	13530-65-9	0.287
Basic lead chromate	Pb ₂ CrO ₅	1344-38-3	0.095
Dichromic acid	H ₂ Cr ₂ O ₇	13530-68-2	0.477
Copper chromite	CuCrO ₄	12053-18-8	0.290
Other Chromium(VI) compounds	-	-	-
(5) Polybrominated biphenyls (PBB)、Polybromodiphenyl ether (PBDE)			
*All substances 1~10BB, 1~10BDE come under prohibited substances			
Bromobiphenyl and ethers	C ₆ H ₅ C ₆ H ₄ Br	2113-57-7	-
	C ₆ H ₅ C ₆ H ₄ Br	92-66-0	-
	C ₆ H ₅ C ₆ H ₄ Br	101-55-3	-
Decabromobiphenyl and ethers	Br(C ₆ H ₄)O(C ₆ H ₅)	2052-07-5	-
	C ₆ Br ₅ C ₆ Br ₅	13654-09-6	-
Dibromobiphenyl and ethers	Br ₅ C ₆ OC ₆ Br ₅	1163-19-5	-
	C ₆ H ₄ BrC ₆ H ₄ Br	92-86-4	-
Heptabromobiphenyl and ethers	-	2050-47-7	-
	-	68928-80-3	-
Hexabromobiphenyl and ethers	C ₆ H ₂ Br ₃ C ₆ H ₂ Br ₃	59080-40-9	-
	C ₆ H ₂ Br ₃ C ₆ H ₂ Br ₃	36355-01-8	-
	C ₁₂ H ₄ Br ₆	67774-32-7	-
	Br ₃ C ₆ H ₂ OC ₆ H ₂ Br ₃	36483-60-0	-
Nonabromobiphenyl and ethers	-	63936-56-1	-
Octabromobiphenyl and ethers	C ₆ HBr ₄ C ₆ HBr ₄	61288-13-9	-
	Br ₄ C ₆ HOC ₆ HBr ₄	32536-52-0	-
Pentabromobiphenyl and ethers	-	32534-81-9	-
Polybrominated Biphenyls	(C ₆ -C ₆)H _x Br _y	59536-65-1	-
Tetrabromobiphenyl and ethers	C ₁₂ H ₆ Br ₄	40088-45-7	-
	-	40088-47-9	-
Tribromobiphenyl and ethers	-	49690-94-0	-
Polybrominated diphenyl ethers	C ₁₂ H _x Br _(10-x) O	-	-

2) Substances prohibited in Products__Other Prohibited substances

Substance	Chemical formula	CAS No.	Metal conversion factor
(1) Polychlorinated biphenyls(PCB)、Polychlorinated triphenyls(PCT)			
Polychlorinated biphenyls	Unspecified	1336-36-3	-
Polychlorinated terphenyls	Unspecified	61788-33-8	-
Arocrol	$(C_6-C_6)_nH_xCl_y$	12767-79-2	-
Chlorodiphenyl(Arocrol 1260)	-	11096-82-5	-
Kanechlor 500	-	27323-18-8	-
Arocrol 1254	-	11097-69-1	-
Terphenils	$C_6H_4(C_6H_5)_2$	26140-60-3	-
(2) Polychlorinated Naphthalenes(PNC)			
Polychlorinated Naphthalenes($Cl \geq 3$)	Unspecified	70776-03-3	-
Trichloronaphtalene	$C_{10}H_5Cl_3$	1321-65-9	-
Tetrachloronaphtalene	$C_{10}H_4Cl_4$	1335-88-2	-
Pentachloronaphtalene	$C_{10}H_3Cl_5$	1321-64-8	-
(3) Short Chain Chlorinated Paraffins(CP)			
Chlorinated paraffine (C10-13)	Unspecified	85535-84-8	-
Other Short Chain Chlorinated Paraffins	-	-	-
(4) Tri-substituted organostannic compounds (TBT, TPT, TBTO etc.)			
*Only substances containing organic tin compounds come under prohibited substances Metal tin, tin alloys, tin plating, and inorganic Tin compounds do not come under this category.			
Triphenyltin-N,N'-dimethyldithiocarbamate	$(C_6H_5)_3Sn(CH_3)_2NCS_2$	1803-12-9	-
Triphenyltin fluoride	$(C_6H_5)_3SnF$	379-52-2	-
Triphenyltin acetate	$(C_6H_5)_3SnOCOCH_3$	900-95-8	-
Triphenyltin chloride	$(C_6H_5)_3SnCl$	639-58-7	-
Triphenyltin hydroxide	$(C_6H_5)_3SnOH$	76-87-9	-
Triphenyltin fatty acid salts (C=9-11)	-	47672-31-1	-
Triphenyltin chloroacetate	$(C_6H_5)_3SnOCOCH_2Cl$	7094-94-2	-
Tributyltin methacrylate	$(C_4H_9)_3SnC_4H_5O_2$	2155-70-6	-
Bis(tributyltin) fumarate	$C_2H_2(COO)_2((C_4H_9)_3Sn)_2$	6454-35-9	-
Bis(tributyltin) oxide(TBTO)	$((C_4H_9)_3Sn)_2O$	56-35-9	-
Tributyltin fluoride	$(C_4H_9)_3SnF$	1983-10-4	-
Bis(tributyltin) 2,3-dibromosuccinate	$((C_4H_9)_3Sn)_2C_2H_2(Br)_2(COO)_2$	31732-71-5	-
Tributyltin acetate	$(C_4H_9)_3SnOCOCH_3$	56-36-0	-
Tributyltin laurate	$(C_4H_9)_3SnC_{12}H_{23}O_2$	3090-36-6	-
Bis(tributyltin) phthalate	$(C_6H_4)(COO)_2((C_4H_9)_3Sn)_2$	4782-29-0	-
Other Tri-substituted organostannic compounds	-	-	-
(5) Asbestos			
Actinolite	Unspecified	77536-66-4	-
Amosite	Unspecified	12172-73-5	-
Anthophyllite	Unspecified	77536-67-5	-
Chrysotile	Unspecified	12001-29-5	-
Crocidolite	Unspecified	12001-28-4	-
Tremolite	Unspecified	77536-68-6	-
Other asbestos	-	-	-

Substance	Chemical formula	CAS No.	Metal conversion factor
(6) Specific Azo compounds			
*Azo compounds are used for various industrial dye, acid dyes, basic dyes, direct dyes, and fixative dyes and form specific amine under this category			
4-aminoazobenzene	C ₁₂ H ₁₁ N ₃	60-09-3	-
o-anisidine	C ₇ H ₉ NO	90-04-0	-
2-naphthylamine	C ₁₀ H ₉ N	91-59-8	-
3,3'-dichlorobenzidine	C ₁₂ H ₁₀ Cl ₂ N ₂	91-94-1	-
Biphenyl-4-ylamine	C ₁₂ H ₁₁ N	92-67-1	-
Benzidine	C ₁₂ H ₁₂ N ₂	92-87-5	-
o-toluidine	C ₇ H ₉ N	95-53-4	-
4-chloro-o-toluidine	C ₇ H ₈ ClN	95-69-2	-
2,4-toluenediamine	C ₇ H ₁₀ N ₂	95-80-7	-
o-aminoazotoluene	C ₁₄ H ₁₅ N ₃	97-56-3	-
5-nitro-o-toluidine	C ₇ H ₈ N ₂ O ₂	99-55-8	-
3,3'-dichloro-4,4'-diaminodiphenylmethane	C ₁₃ H ₁₂ Cl ₂ N ₂	101-14-4	-
4,4'-methylenedianiline	C ₁₃ H ₁₄ N ₂	101-77-9	-
4,4'-diaminodiphenylether	C ₁₂ H ₁₂ N ₂ O	101-80-4	-
p-chloroaniline	C ₆ H ₆ ClN	106-47-8	-
3,3'-dimethoxybenzidine	C ₁₄ H ₁₆ N ₂ O ₂	119-90-4	-
3,3'-dimethylbenzidine	C ₁₄ H ₁₆ N ₂	119-93-7	-
2-methoxy-5-methylaniline	C ₈ H ₁₁ NO	120-71-8	-
2,4,5-trimethylaniline	C ₉ H ₁₃ N	137-17-7	-
4,4'-thiodianiline	C ₁₂ H ₁₂ N ₂ S	139-65-1	-
2, 4-methoxy-m-phenylenediamine	C ₇ H ₁₀ N ₂ O	615-05-4	-
4,4'-methylenedi-o-toluidine	C ₁₅ H ₁₈ N ₂	838-88-0	-
(7) Poly vinyl chloride (PVC)			
Poly vinyl chloride (PVC) and its mixture	(CH ₂ CHCl) _n	9002-86-2	-
Vinyl chrolide/vinyl acetate copolymer	-	9003-22-9	-
(8) Radioactive substances			
Uranium	U	7440-61-1	-
Plutonium	Pu	7440-07-5	-
Radon	Rn	10043-92-2	-
Americium	Am	7440-35-9	-
Thorium	Th	7440-29-1	-
Cesium	Cs	7440-46-2	-
Strontium	Sr	7440-24-6	-
Other radioactive substances	-	-	-
(9) Heptadecafluorooctane-1-sulphonic acid (PFOS)			
heptadecafluorooctane-1-sulphonic acid	C ₈ HF ₁₇ O ₃ S	1763-23-1	-
lithium heptadecafluorooctanesulphonate	C ₈ HF ₁₇ LiO ₃ S	29457-72-5	-
potassium heptadecafluorooctane-1-sulphonate	C ₈ HF ₁₇ KO ₃ S	2795-39-3	-
Other heptadecafluorooctane-1-sulphonic acid kind edge compound	-	-	-
(10) Dibutyltin (DBT) compounds			
Dibutyltin oxide	C ₈ H ₁₈ OSn	818-08-6	0.477
1,3,2,4-Dioxastannaboretane, 2,2-dibutyl-4-hydroxy-	C ₈ H ₁₉ BO ₃ Sn	75113-37-0	0.407
Other dibutyltin compounds	-	-	-
(11) Dioctyltin (DOT) compounds			
Dioctyltin dichloride	C ₁₆ H ₃₄ Cl ₂ Sn	3542-36-7	0.285
Bis(benzoyloxy)dioctylstannane	C ₃₀ H ₄₄ O ₄ Sn	23519-66-6	0.202
Other dioctyltin compounds	-	-	-

3) Substances restricted in Products

Substance	Chemical formula	CAS No.	Metal conversion factor
(1) Other organochlorine compounds			
Tris(2-chloroethyl)phosphate; tris(beta-chloroethyl)phosphate; TCEP	$(CICH_2CH_2O)_3P=O$	115-96-8	-
Tris(chloropropyl)phosphate; TCPP	$(CIC_3H_6O)_3P=O$	6145-73-9	-
Tris(dichloropropyl)phosphate; CRP; TDCPP	$(CIC_3H_5O)_3P=O$	78-43-3	-
Tetrachloro phthalic anhydride	-	117-08-8	-
Other organochlorine compounds	-	-	-
(2) Other brominated flame retardants			
Poly(2,6-dibromo-phenylene oxide)	$(C_6H_2Br_2O)_x$	69882-11-7	-
Tetra-decabromo-diphenoxy-benzene	$C_{18}Br_{14}O_2$	58965-66-5	-
1,2-bis(2,4,6-tribromo-phenoxy) ethane	$C_{14}H_8Br_6O_2$	37853-59-1	-
3,5,3',5'-Tetrabromo-bisphenol A (TBBA)	$C_{15}H_{12}Br_4O_2$	79-94-7	-
TBBA	unspecified	30496-13-0	-
TBBA-epichlorhydrin oligomer	$(C_{15}H_{12}Br_4O_2 \cdot C_3H_5ClO)_x$	40039-93-8	-
TBBA-TBBA-diglycidyl-ether oligomer	-	70682-74-5	-
TBBA carbonate oligomer	$(C_{15}H_{12}Br_4O_2 \cdot CCl_2O)_x$	28906-13-0	-
TBBA carbonate oligomer,phenoxy ,end capped	$(C_7H_5O_2)(C_{16}H_{10}Br_4O_3)_x(C_6H_5O)$ (x=3~5)	94334-64-2	-
TBBA carbonate oligomer , 2,4,6-tribromo-phenol terminated	$(C_7H_2Br_3O_3)(C_{16}H_{10}Br_4O_3)_n(C_6H_2Br_3)$ (n=3~5)	71342-77-3	-
TBBA-bisphenol A-phosgene polymer	$(C_{15}H_{16}O_2 \cdot C_{15}H_{12}Br_4O_2 \cdot CCl_2O)_x$	32844-27-2	-
Brominated epoxy resin end-capped with tribromophenol	-	139638-58-7	-
		135229-48-0	-
TBBA-(2,3-dibromo-propyl-ether)	$C_{21}H_{20}Br_8O_2$	21850-44-2	-
TBBA bis-(2-hydroxy-ethyl-ether)	$C_{19}H_{20}Br_4O_4$	4162-45-2	-
TBBA-bis-(allyl-ether)	$C_{21}H_{20}Br_4O_2$	25327-89-3	-
TBBA-dimethyl-ether	$C_{17}H_{16}Br_4O_2$	37853-61-5	-
Tetrabromo-bisphenol S	$C_{12}H_6Br_4O_4S$	39635-79-5	-
TBBS-bis-(2,3-dibromo-propyl-ether)	$C_{18}H_{14}Br_8O_4S$	42757-55-1	-
2,4-dibromo-phenol	$C_6H_4Br_2O$	615-58-7	-
Other brominated flame retardants	-	-	-
(3) Nickel and Nickel compounds *All substances containing nickel and nickel compounds come under prohibited substances			
Nickel(II) oxide	NiO	1313-99-1	0.786
Nickel(II) carbonate	NiCO ₃	3333-67-3	0.494
Nickel(II) Sulfate	NiSO ₄	7786-81-4	0.379
Nickel	Ni	7440-02-0	1.000
Nickel chloride	NiCl ₂	7718-54-9	0.453
Other nickel compounds	-	-	-

Substance	Chemical formula	CAS No.	Metal conversion factor
(4) Arsenic and Arsenic compounds			
Arsenic	As	7440-38-2	1.000
Gallium arsenide	GaAs	1303-00-0	0.518
Arsenic pentoxide	As ₂ O ₅	1303-28-2	0.652
Arsenic trioxide	As ₂ O ₃	1327-53-3	0.757
Calcium arsenate	Ca ₃ (AsO ₄) ₂	7778-44-1	0.376
Calcium arsenite	Ca ₃ (AsO ₃) ₂	27152-57-4	0.409
Potassium arsenite	KAsO ₂	10124-50-2	0.513
Potassium arsenate	KH ₂ AsO ₄ , K ₂ HAsO ₄	7784-41-0	0.416
Lead arsenate	Pb ₃ (AsO ₄) ₂	3687-31-8	0.167
Other arsenic compounds	-	-	-
(5) Perfluoro-octanoic acid (PFOA)			
Perfluoro-octanoic acid	C ₈ HF ₁₅ O ₂	335-67-1	-
Perfluoro-octanoic acid ammonium	C ₈ H ₄ F ₁₅ NO ₂	3825-26-1	-
Other Perfluoro-octanoic acid kind edge compound	-	-	-
(6) Antimony and Antimony compounds			
Antimony	Sb	7440-36-0	1.000
Antimony trichloride	SbCl ₃	10025-91-9	0.534
Antimony pentoxide	Sb ₂ O ₅	1314-60-9	0.753
Sodium antimonate	NaSbO ₂	15432-85-6	0.690
Other antimony compounds	-	-	-
(7) Selenium and Selenium compounds			
Selenium	Se	7782-49-2	1.000
Selenous acid	H ₂ SeO ₃	7783-00-8	0.612
Hydrogen selenide	H ₂ Se	7783-07-5	0.975
Sodium selenide	Na ₂ Se	1313-85-5	0.632
Sodium selenate	Na ₂ SeO ₄	10112-94-4	0.418
Dimethyl selenide	(CH ₃) ₂ Se	593-79-3	0.724
Selenium oxide	SeO ₂	7446-08-4	0.712
Other selenium compounds	-	-	-
(8) Beryllium and Beryllium compounds			
Beryllium	Be	7440-41-7	1.000
Beryllium-aluminum alloy	-	12770-50-2	-
Beryllium chloride	BeCl ₂	7787-47-5	0.113
Beryllium fluoride	BeF ₂	7787-49-7	0.192
Beryllium hydroxide	Be(OH) ₂	13327-32-7	0.209
Beryllium phosphate	Be ₃ (PO ₄) ₂	13598-15-7	0.125
Beryllium sulfate	BeSO ₄	13510-49-1	0.086
Beryllium sulfate tetrahydrate	BeSO ₄ ·4H ₂ O	7787-56-6	0.051
Beryl ore	Be ₃ Al ₂ Si ₆ O ₁₈	1302-52-9	0.050
Other beryllium compounds	-	-	-

Substance	Chemical formula	CAS No.	Metal conversion factor
(9) Phthalate ester			
(DBP) Dibutylphthalate(DBP)	$C_{16}H_{22}O_4$	84-74-2	-
Di(2-ethylhexyl)phthalate(DEHP)	$C_{24}H_{38}O_4$	117-81-7	-
Diisononyl phthalate	$C_{24}H_{38}O_4$	28553-12-0	-
1,2-benzenedicarboxylic acid diisodecylester	$C_{28}H_{46}O_4$	26761-40-0	-
Butyl benzyl phthalate	$C_{19}H_{20}O_4$	85-68-7	-
Bis(2-methoxyethyl)phthalate(DBP)	-	117-82-8	-
Bis(n-octyl)Phthalate	$C_6H_4(COOC_8H_{17})_2$	117-84-0	-
Other phthalate	-	-	-
(10) Bismuth and Bismuth compounds			
Bismuth	Bi	7440-69-9	1.000
Bismuth trioxide	Bi_2O_3	1304-76-3	0.897
Bismuth nitrate	$Bi(NO_3)_3$	10361-44-1	0.529
Other bismuth compounds	-	-	-

8. Revision History List

Revision date	Target	Rev	Revision description
2005.12.22	Standards 1-1) : Policy Standards 1-2) : Usage Standards 2) : Substance list Standards 3) : Substance detail	● A ● A ● A ● A	Standards 1-3 of 「Nidec Sankyo's green procurement guideline Version 6」 is the Original Version Rev.A. (It complies with the company standards 『Green Procurement Rules』 Rev.J, Standards 1-3) (It complies with company standards 『Environmental Substances Control Rules』 Rev.B, Attachment 1-3)
<Revised reason>			
2009.07.15	Standards 1 : Control standards Standards 2 : Substance list Standards 3 : Substance detail	Integration Rev E (Rev5.0)	2. Substances prohibited in Products __RoHS substances 1) 2 Add the threshold of lead content in solder 2) Add "Mercury" in the title < Separate by 2.3 > (1)Modify contents of "(1) Pretreatment of Analysis sample" (2)Change the title "Recommended measuring device" to "Recommended analysis method" and modify contents 3)Change the title "Analysis method of Hexavalent Chromium", and modify contents 4)Separate "Analysis method of PBB/PBDE" from 2.3 5)Move "4) Update of precise analytical data of substance designated by RoHS" to 5) 3. Substances prohibited in Products __Other Prohibited Substances 1)Add the substance "18 Dimethyl Fumarate (DMF)" 4. Substances prohibited in Products __Halogen free Substances 1)Change the title "Usage for restriction" to "Range of restriction object", and extend the range to "Lens Actuator in a cellular phone"
<Revision reason> 1)Reconsideration of pretreatment and analysis method of RoHS substances 2)Addition of substances prohibited in products 3)Extension of range of restriction object			
2009.09.25	Standards 1 : Control standards Standards 2 : Substance list Standards 3 : Substance detail	Integration Rev F (Rev6.0)	2. Substances prohibited in Products __RoHS substances 1)Addition of the following division to the Pb threshold of solder. • Solder in flow/dip tank, and solder used to connect PWB, parts, etc : 800ppm 4. Substances prohibited in Products __Halogen free Substances 1)The threshold value of Br/Cl is changed according to the main customer standard as follows. • Br / Cl : 900 →630ppm • Br + Cl : 1500→1000ppm
<Revision reason> 1) Subdivision of Pb threshold value of solder 2) Change of threshold value of halogen free Substances.			
2010.08.03	Standards 1 : Control standards Standards 2 : Substance list Standards 3 : Substance detail	Integration Rev G (Rev7.0)	NIDEC SANKYO Environmental Substances Control Standards(ENG,JPG,CHN) Revision 6.0→7.0 2. Substances prohibited in Products __RoHS substances 1)Substance List Delete "Glass material of optic/filter" from "<Exemptions>" of "No.1 Cadmium and Cadmium compounds" 3. Substances prohibited in Products __Other Prohibited Substances 1)Substance List ①Change the expression of "Organotin compounds (TBT, TPT etc.)" → "Tri-substituted organostannic compounds (TBT, TPT, TBTO etc.)". ②Delete No.6 "Bis (tributyltin) oxide (TBTO)" from the list and add it in "7.Details of Environmental Substances 2)Substances prohibited in Products __Other Prohibited substances (4)Tri-substituted organostannic compounds (TBT, TPT,TBTO etc.)". 4. Substances prohibited in Products __Halogen free Substances 3)Substance List Add "Materials for restriction used for FPC <700ppm" in "Restriction condition, threshold value" of No.1 "Chlorine (Cl element)" and No.2 "Bromine (Br element)".
<Revision reason> ※Adaptation to the industry / the main customer standard required 1)Reconsideration of restriction substances 2) Change of threshold value of halogen free Substances.			
2011.02.25	Standards 1 : Control standards Standards 2 : Substance list Standards 3 : Substance detail	Integration Rev H (Rev8.0)	NIDEC SANKYO Environmental Substances Control Standards(ENG,JPG,CHN) Revision 7.0→8.0 1. Stance in environmental substance control_1) Selection criteria in environmental substances_ (1)Notes 1)EU Laws →Add "REACH_AnnexXVII" 3. Substances prohibited in Products_Other Prohibited Substances →Add No18.Dibutyltin (DBT) compounds、Diocetyltn (DOT) compounds 7. Details of Environmental Substances_2) Substances prohibited in Products_ Other Prohibited substances →Add (10) Dibutyltin (DBT) compounds, (11) Diocetyltn (DOT) compounds
<Revision reason> 1)Reconsideration of restriction substances			
2011.11.24	Standards 1 : Control standards Standards 2 : Substance list Standards 3 : Substance detail	Integration Rev I (Rev8.1)	3.-1)~9 Deletion of regulation Exemptions of PVC
<Revision reason> 1)Deletion of regulation Exemptions of PVC			