

NGK Group's
Green Procurement
Guideline

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NGK INSULATORS, LTD.

Environmental Management Department

Purchasing Department

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- Purpose and terms of prohibited substances and restricted use substance
- Check Sheet for Environmental Awareness

I. Environmental Efforts of NGK Groups

1. Fundamental Environmental Policy

NGK instituted its own Core Policy on the Environment in March, 1996 is conducting business activities (including purchasing) in accordance with following course of action for positive contribution to global environmental conservation.

Environmental Philosophy

NGK's positive approach to the environment begins with its basic corporate philosophy: "NGK products and technologies must create new value and contribute to the quality of life." In particular, we focus on the "Triple-E areas of Ecology, Electronics and Energy. Through our work in these areas, we seek to develop solutions to some of the critical challenges facing the world today and in the future.

Environmental Action Guidelines

1. Strive toward development, design, and manufacture of products that are environmentally friendly, and that have a low impact on the environment.
2. Work toward decreasing the environmental impact of our business activities.
Use design review methods to scientifically study and evaluate the environmental impact of our business activities.
 - 1) Promote energy conservation in process and equipment, and work toward curbing CO2 emissions.
 - 2) Promote resource savings and recycling, and work toward the reduction of by-products.
 - 3) Reduce risks through the appropriate usage and management of chemical substances.
 - 4) Give priority to the procurement and purchasing of environmentally friendly materials, parts, products and equipment. Furthermore, strengthen partnerships with suppliers of these materials.
3. Enhance environmental management systems from a global viewpoint, and implement continuous reforms in order to reduce the impact on the environment.
4. Strictly adhere to laws, regulations, and other requirements. Furthermore, establish voluntary standards, and work toward increased environmental conservation.
5. Disclose environmental information outside the Company, and continue discussions with all interested parties. Actively develop community relations activities. Furthermore, carry out training and publicity activities in order to increase employee awareness of environmental issues.

2. Basic Policy of Green Procurement

According to the Core Policy on the Environment, NGK enacted its Basic Policy of Green Procurement in April 2000 and NGK has since been working on reduction of environmental impacts.

Basic Green Procurement Policy

- 1) Implement Green Procurement procedures for raw materials, parts, manufacturing facilities, sub-materials, office supplies, and all other purchased goods and services.
- 2) Give precedence to products and services with good quality, price, and delivery terms that also feature a low environmental impact, as well as to corporations which give important consideration to environmental protection.

II. NGK Group's Green Procurement Guideline

1. Perspective of NGK Group's Green Procurement

NGK and its Group Companies strive to reduce environmental impact. However, to enhance the effectiveness of environmental conservation activities, it is necessary for all business partners to work together across the entire supply chain. Therefore, NGK and its Group Companies give precedence to products and services with good quality, price, and delivery terms that also feature a low environmental impact, as well as to corporations which give important consideration to environmental protection.

2. Guideline for Purchasing Goods and Services

1) Common Standard

NGK and its Group Companies will purchase Goods and Services preferentially which meet with the following requirements as "Green Items":

1. Corresponding to any of the following:
 - a) Long life items (a longer life than other existing items)
 - b) Items which are made of recyclable materials or reusable materials.
 - c) Items which are easier to recycle or easier for classified disposal.
 - d) Items which have less environmental impact at the time of disposal
 - e) Items which contribute to generous environmental conservation such as energy-saving or resource savings.
2. Items which are undertaken with regard to the following conditions:
 - a) Items which adopt proper countermeasures for environmental preservation at each phase of the manufacturing process
 - b) Items which are not difficult to dispose.
 - c) Items of which quality and safety meet related laws and regulations.

2) Purchase Category Standards

The following items shall be satisfied for each Purchased Goods and Services.

< Raw Material, Various Parts >

Do not use banned chemical substances as described in Appendix A.

In Japan, do not use restricted-use substances as described in Appendix B.

As for the details of the purposes of the standard, see Supplementary Document.

If the rate of content in Appendix C is above threshold level in raw materials and/or various parts, NGK or its Group Companies may ask suppliers to inform this by submitting the actual content data.

Outside of Japan, raw materials and/or various parts shall comply with applicable rules and/ or regulations for each country/or region and shall not contain restricted-use substances as described in Appendix B.

If the rate of content in Appendix C is above threshold level in raw materials and/or various parts, NGK or its Group Companies may ask suppliers to inform this by submitting the actual content data.

In any event NGK or its Group Companies may ask suppliers to submit “Certification for Non-Inclusion” and /or detailed data for some particular chemical substance if or when necessary.

<Generally Purchased goods>

As a general rule of Japan, use Goods with environmental labels such as Eco Mark certified products and Green Mark-certified items and conforming to GPN (Green Purchasing Network) Guidelines.

As for outside of Japan, strive to use “environmentally-friendly” goods which comply with European Eco Level standards, etc.

3. Requirements for Environmental Conservation Activities for Business Partners

To promote effective environmental conservation activities across the entire supply chain, NGK and its Group Companies request that all suppliers take the following actions.

- Establish and apply its own Environmental Management System or acquire and apply a third-party certificate for Environmental Management System such as ISO14000's.
- Cooperate in replying to “Check Sheet for Environmental Awareness” (see the last 2 pages of Supplementary Document) when asked by NGK or its Group Companies. After reply, a plant visit might be requested if necessary.

To promote environmental load reduction development, NGK and its Group Companies have introduced our own recognition system as “NGK Group Green Supplier” for a supplier which keeps certain standards of environmental effort. The requirements are ISO14000 or other third-party certificate of an Environmental Management System, or the result (score) of “Check Sheet for Environmental Awareness” is above a certain level.

4. Appropriate NGK Group Companies

These standards apply to NGK Insulators and its Group Companies as below.

In some cases, one (or some) of Group Companies might individually formulate its own guideline which includes the Prohibited Substances List and Application of the Regulations etc. based on this guideline.

Japan
NGK Insulators, Ltd.
Energy Support Co., Ltd.
Akechi Insulators Co.,Ltd.
Ikebukuro Horo Kogyo Co.,Ltd.
NGK Filtech, Ltd.
NGK Adrec Co.,Ltd.
NGK Kilntech Corporation
Heisei Ceramics Co.,Ltd.
NGK Ceramic Device Co., Ltd.
Soshin Electric Co., Ltd
NGK Okhotsk, Ltd.
NGK Mettex Corporation
NGK Fine Molds, Ltd.
North American Region
Locke Insulators, Inc.
NGK-Locke Polymer Insulators, Inc.
NGK Ceramics USA, Inc.
NGK Metals Corporation
FM Industries, Inc
NGK Ceramics Mexico, S.de R.L. de C.V.
European, African Region
NGK Ceramics Poland Sp. z o.o.
NGK Ceramics Europe S.A.
NGK Berylco France
NGK Ceramics South Africa (Pty) Ltd.
Asia, Oceania Region
NGK Insulators Tangshan Co., Ltd.
NGK Insulators Suzhou Co., Ltd.
NGK Ceramics Suzhou Co., Ltd.
NGK Technocera Suzhou Co., Ltd.
P.T. NGK Ceramics Indonesia
SIAM NGK Technocera Co., Ltd.
NGK Stanger Pty. Ltd.

List of Prohibited Substances

The following 114 substances are prohibited for use.

No	Name of chemicals	Laws and regulations	Specified content	Reference/ CAS No.*
1	O-Alkyl (incl. cycloalkyl) alkyl-phosphonofluoridates (limited to those which have 10 or less carbons in alkyl group in O-alkyl and 3 or less carbons in alkyl group in alkyl phosphonofluoridates)	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	107-44-8 96-64-0
2	O-Alkyl (incl. cycloalkyl)=N,N-dialkyl=phosphoramidocyanidates (limiting to those which have 10 or less carbons in alkyl group in O-alkyl and 3 or less carbons in alkyl group in N,N-dialkyl)	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	77-81-6
3	O-Alkyl (incl. cycloalkyl)=S-2-dialkylaminoethyl=alkyl phosphonothiolates (limited to those which have 10 or less carbons in alkyl group in O-alkyl and 3 or less carbons in alkyl group in S-2-dialkylaminoethyl and alkylphosphonothiolates) and corresponding alkylated or protonated salts	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	50782-69-9
4	S-2-dialkylaminoethyl=hydrogen=alkyl phosphonothiolates (limited to those which have 3 or less carbons in alkyl group in S-2-dialkylaminoethyl and alkylphosphonothiolates) and corresponding alkylated or protonated salts	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	-
5	2-chloroethyl methyl sulfide	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	2625-76-5
6	Bis(2-chloroethyl)sulfide	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	505-60-2
7	Bis(2-chloroethylthio)methane	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	63869-13-6
8	1,2-Bis(2-chloroethylthio)ethane	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	3563-36-8
9	1,3-Bis(2-chloroethylthio)-n-propane	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	63905-10-2
10	1,4-Bis(2-chloroethylthio)-n-butane	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	142868-93-7
11	1,5-Bis(2-chloroethylthio)-n-pentane	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	142868-94-8
12	Bis(2-chloroethylthiomethyl)ether	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	63918-90-1
13	Bis(2-chloroethylthioethyl)ether	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	63918-89-8
14	2-chlorovinyl dichloroarsine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	541-25-3
15	Bis(2-chlorovinyl)chloroarsine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	40334-69-8
16	Tris(2-chlorovinyl)arsine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	40334-70-1
17	Bis(2-chloroethyl)ethylamine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	538-07-8
18	Bis(2-chloroethyl)methylamine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	51-75-2
19	Tris(2-chloroethyl)amine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	555-77-1
20	Saxitoxin	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	35523-89-8
21	Lysine	Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals (Specific substance)	Not specified	9009-86-3

No	Name of chemicals	Laws and regulations	Specified content	Reference/ CAS No.*
22	Polychlorinated biphenyl (Synonym: PCB)	Law Concerning Special Measures against PCB Waste Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
23	Alkylmercury compound	Poisonous and Deleterious Substances Control Act (Poisonous substance)	Not specified	-
24	Alkylmercury compound	Industrial Safety and Health Act (Substance prohibited for manufacture)	Not specified	-
25	Benzidine and its salts	Industrial Safety and Health Act (Substance prohibited for manufacture)	>1 wt%	-
26	4-aminodiphenyl and its salts	Industrial Safety and Health Act (Substance prohibited for manufacture)	>1 wt%	-
27	4-nitrodiphenyl and its salts	Industrial Safety and Health Act (Substance prohibited for manufacture)	>1 wt%	-
28	Bis(chloromethyl)ether	Industrial Safety and Health Act (Substance prohibited for manufacture)	>1 wt%	542-88-1
29	β -naphthylamine and its salts	Industrial Safety and Health Act (Substance prohibited for manufacture)	>1 wt%	-
30	Rubber adhesives containing benzene exceeding 5% of solvent (including diluents) of rubber adhesive	Industrial Safety and Health Act (Substance prohibited for manufacture)		-
31	Asbestos *amosite, crocidolite, chrysotile, tremolite, akutinolite, anthophyllite	Industrial Safety and Health Act (Substance prohibited for manufacture)	>0.1 wt% (total wt% of 6 types)	-
32	Trichlorofluoromethane (Synonym: FC-11)	Ozone Layer Protection Law (A-I)	Not specified	75-69-4
33	Dichlorodifluoromethane (Synonym: CFC-12)	Ozone Layer Protection Law (A-I)	Not specified	75-71-8
34	Trichlorotrifluoroethane (Synonym: CFC-113)	Ozone Layer Protection Law (A-I)	Not specified	-
35	Dichlorotetrafluoroethane (Synonym: CFC-114)	Ozone Layer Protection Law (A-I)	Not specified	-
36	Chloropentafluoroethane (Synonym: CFC-115)	Ozone Layer Protection Law (A-I)	Not specified	76-15-3
37	Polychlorinated naphthalene (PCN) (limited to those which have 3 or more chloride)	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
38	Hexachlorobenzene	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	118-74-1
39	Aldrin	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	309-00-2
40	Dieldrin	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	60-57-1
41	Endrin	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	72-20-8
42	Dichloro-diphenyl-trichloroethane (DDT)	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	50-29-3
43	Chlordane or heptachlor	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
44	Bis(tributyltin)oxide	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	56-35-9
45	N,N'-Ditolyl-p-phenylenediamine, N-tolyl-N'-xylyl-p-phenylenediamine, or N,N'-dixylyl-p-phenylenediamine	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
46	2,4,6-tri-tert-butylphenol	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	732-26-3
47	Toxaphene	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	8001-35-2
48	Mirex	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	2385-85-5
49	Kelthane or Dicofol	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	115-32-3

No	Name of chemicals	Laws and regulations	Specified content	Reference/ CAS No.*
50	Hexachlorobuta-1,3-diene	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	87-68-3
51	2-(2H-1,2,3-Benzotriazol-2-yl)-4,6-di-tert-butylphenol	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	3846-71-7
52	Perfluoro(octane-1-sulfonic acid) (Synonym: PFOS) or its salts	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
53	Perfluorooctane sulfonyl fluoride (PFOSF)	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	307-35-7
54	Pentachloro benzene	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	608-93-5
55	α -Hexachlorocyclohexane	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	319-84-6
56	β -Hexachlorocyclohexane	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	319-85-7
57	γ -Hexachlorocyclohexane or lindane	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	58-89-9
58	Chlordecone	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	143-50-0
59	Hexabromobiphenyl	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
60	Tetrabromodiphenyl ether	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
61	Pentabromodihphenyl ether	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
62	Hexabromodiphenyl ether	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
63	Heptabromodiphenyl ether	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Class I specified chemical substance)	Not specified	-
64	Bromochlorodifluoromethane*** (Synonym: Halon-1211)	Ozone Layer Protection Law (A-II)	Not specified	353-59-3
65	Bromotrifluoromethane*** (Synonym: Halon-1301)	Ozone Layer Protection Law (A-II)	Not specified	75-63-8
66	Dibromotetrafluoroethane*** (Synonym: Halon-2402)	Ozone Layer Protection Law (A-II)	Not specified	-
67	Chlorotrifluoromethane (Synonym: CFC-13)	Ozone Layer Protection Law (B-I)	Not specified	75-72-9
68	Pentachlorofluoroethane (Synonym: CFC-111)	Ozone Layer Protection Law (B-I)	Not specified	354-56-3
69	Tetrachlorodifluoroethane (Synonym: CFC-112)	Ozone Layer Protection Law (B-I)	Not specified	-
70	Heptachlorofluoropropane (Synonym: CFC-211)	Ozone Layer Protection Law (B-I)	Not specified	-
71	Hexachlorodifluoropropane (Synonym: CFC-212)	Ozone Layer Protection Law (B-I)	Not specified	-
72	Pentachlorotrifluoropropane (Synonym: CFC-213)	Ozone Layer Protection Law (B-I)	Not specified	-
73	Tetrachlorotetrafluoropropane (Synonym :CFC-214)	Ozone Layer Protection Law (B-I)	Not specified	-
74	Trichloropentafluoropropane (Synonym: CFC-215)	Ozone Layer Protection Law (B-I)	Not specified	-
75	Dichlorohexafluoropropane (Synonym: CFC-216)	Ozone Layer Protection Law (B-I)	Not specified	-
76	Chloroheptafluoropropane (Synonym: CFC-217)	Ozone Layer Protection Law (B-I)	Not specified	-
77	Carbon tetrachloride	Ozone Layer Protection Law (B-II)	Not specified	56-23-5
78	1,1,1-Trichloroethane	Ozone Layer Protection Law (B-III)	Not specified	71-55-6
79	Dibromofluoromethane	Ozone Layer Protection Law (C-II)	Not specified	1868-53-7
80	Bromodifluoromethane (Synonym: HBFC-22B1)	Ozone Layer Protection Law (C-II)	Not specified	1511-62-2
81	Bromofluoromethane	Ozone Layer Protection Law (C-II)	Not specified	373-52-4
82	Tetrabromofluoroethane	Ozone Layer Protection Law (C-II)	Not specified	306-80-9
83	Tribromodifluoroethane	Ozone Layer Protection Law (C-II)	Not specified	-
84	Dibromotrifluoroethane	Ozone Layer Protection Law (C-II)	Not specified	354-04-1
85	Bromotetrafluoroethane	Ozone Layer Protection Law (C-II)	Not specified	-
86	Tribromofluoroethane	Ozone Layer Protection Law (C-II)	Not specified	-
87	Dibromodifluoroethane	Ozone Layer Protection Law (C-II)	Not specified	-
88	Bromotrifluoroethane	Ozone Layer Protection Law (C-II)	Not specified	421-06-7

No	Name of chemicals	Laws and regulations	Specified content	Reference/ CAS No.*
89	Dibromofluoroethane	Ozone Layer Protection Law (C-II)	Not specified	358-97-4
90	Bromodifluoroethane	Ozone Layer Protection Law (C-II)	Not specified	-
91	Bromofluoroethane	Ozone Layer Protection Law (C-II)	Not specified	762-49-2
92	Hexabromofluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
93	Pentabromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
94	Tetrabromotrifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
95	Tribromotetrafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
96	Dibromopentafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
97	Bromohexafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	2252-79-1
98	Pentabromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
99	Tetrabromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
100	Tribromotrifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
101	Dibromotetrafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
102	Bromopentafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
103	Tetrabromofluoropropane	Ozone Layer Protection Law (C-II)	Not specified	148875-95-0
104	Tribromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	70192-80-2
105	Tetrabromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
106	Tribromotrifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
107	Dibromotetrafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	75372-14-4
108	Bromopentafluoropropane	Ozone Layer Protection Law (C-II)	Not specified	460-25-3
109	Tetrabromofluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
110	Tribromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	51584-26-0
111	Tetrabromodifluoropropane	Ozone Layer Protection Law (C-II)	Not specified	-
112	Bromofluoropropane	Ozone Layer Protection Law (C-II)	Not specified	352-91-0
113	Bromochloromethane	Ozone Layer Protection Law (C-III)	Not specified	74-97-5
114	Methyl bromide	Ozone Layer Protection Law (E-I)	Not specified	74-83-9

*This list specifies prohibited substances by its chemical substance name. CAS No. is indicated as a reference because CAS No. of some prohibited substances are not specified in this list. **Excluding use in existing refrigerant facilities. ***Excluding halon for extinguisher.

List of Restricted-use Substances

Content of the following 6 substances specified in EU RoHS directive must not exceed maximum allowable concentration in the specified usage. The maximum allowable concentration is the content of the substance in a homogenous substance in a product (Note 2). Products exempted from this restriction are shown in a separate table. (List of Exempted Products)

Substances	Specified usage	Maximum allowable concentration (Note 2)
Cadmium and cadmium compounds	Parts of automobiles, and raw materials or parts of electric, electronic devices for usage or specification specified in Note 1	Content of cadmium: 100ppm
Hexavalent chromium and hexavalent chromium compounds		Content of hexavalent chromium: 1000ppm
Lead and lead compounds		Content of lead: 1000ppm
Mercury and mercury compounds		Content of mercury: 1000ppm
Polybrominated biphenyls (PBB)		Content of PBB: 1000ppm
Polybrominated diphenyl ethers (PBDE)		Content of PBDE: 1000ppm

Note 1) Products in one of 1 to 8 as follows designed for voltage rating not exceeding 1000 VAC or 1500 VDC.

- | |
|---|
| <ol style="list-style-type: none"> 1 Large home appliances: refrigerators, washing machines, microwaves, air conditioners, etc. 2 Small home appliances: vacuum cleaners, irons, hair dryers, etc. 3 IT and remote communication devices: main frames, minicomputers, personal computers, printers, mobile phones, etc. 4 Consumer use devices: radios, televisions, videos, audio amplifiers, musical instruments, etc. 5 Illumination devices: fluorescent lamps, high brightness electric discharge lamps, low pressure sodium lamps, etc. 6 Electric tools: machining tools such as tools for drilling, grinding and polishing (excluding large fixed tools for industrial use), mowers, etc. 7 Toys: train and car racing sets, game machines, etc. |
|---|

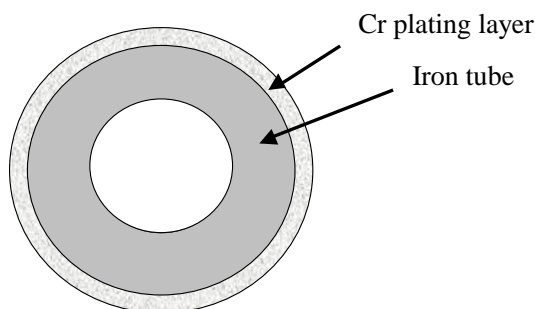
Note 2) Homogenous substance

Homogenous substance refers to a substance with uniform composition and cannot be separated by mechanical means such as cutting, grinding, breaking or de-soldering. Content in the list is specified for each homogenous substance. Therefore, the content of prohibited or restricted use substances in each homogenous substance must be considered in order to determine their content in the whole product.

Example)

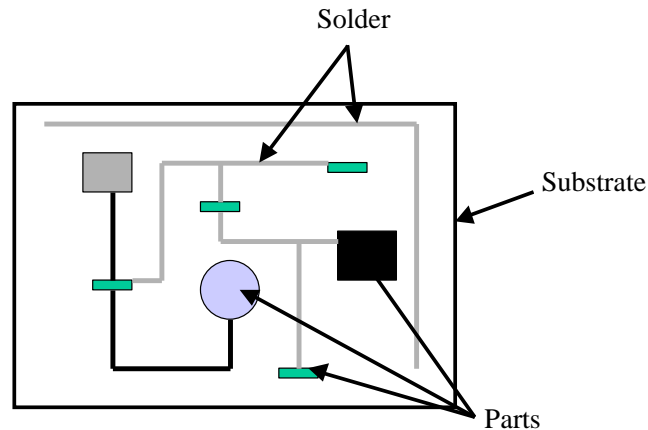
- Products with iron tube coated with Cr

→ Iron tube and plating are different homogenous substances. Therefore, Cr(+6) content of iron tube and plating should be considered separately to determine the Cr(+6) content of the products.



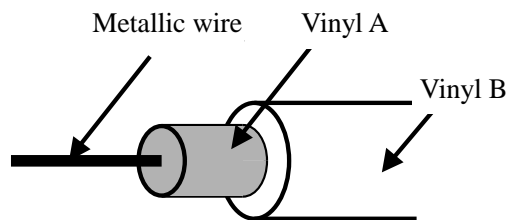
- Circuit substrate products using solder (uniform composition) containing lead (parts other than solder is lead-free)

→ Entire solder part is a homogenous substance. Therefore, the Pb content in the solder part should be considered to determine the Pb content of the products.



- Cable with metallic wire coated with 2 types of vinyl

→ Metallic wire and 2 types of vinyl are different homogeneous substances. Therefore, the contents of 6 substances should be considered separately for each homogenous substance.



List of Exempted Products

Cadmium	
8	Cadmium, its compounds and cadmium surface treatment in electric contacts except usage banned by Directive 91/338/EEC amending for Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations.
13	Lead and cadmium in optic or filter glasses.
21	Lead and cadmium in printing inks for borosilicate glasses.
30	Cadmium alloys as electrical/mechanical solder joints to electrical conductors located directly on the voice coil in transducers used in high-powered loudspeakers with sound pressure levels of 100 dB (A) and more.
38	Cadmium and cadmium oxide in thick film pastes used on aluminum bonded beryllium oxide.
Hexavalent chromium	
9	Hexavalent chromium as an anticorrosion agent of the carbon steel cooling system in absorption refrigerators
Lead	
5	Lead in glass of cathode ray tubes, electronics or fluorescent tubes.
6	Lead as an alloying element in steel containing up to 0.35 % lead by weight, in aluminum containing up to 0.4 % lead by weight, or in copper alloy containing up to 4 % lead by weight.
7	Lead in high melting temperature type solders (i.e. tin/lead solder alloys containing 85 % by weight or more lead).
	Lead in solders for servers, storage and storage array systems, network infrastructure equipment for switching, signaling, transmission, and network management for telecommunications.
	Lead in electronic ceramics (e.g. piezoelectronic devices).

List of Exempted Products (continued)

Lead	
9b	Lead in lead bronze bearing shells and bushes.
11	Lead in compliant pin connector systems.
12	Lead as a coating material for the thermal conduction module C-ring.
13	Lead and cadmium in optic or filter glasses.
14	Lead in solders consisting of more than two elements for the connection between the pins and the package of microprocessors with a lead content of more than 80% and less than 85%.
15	Lead in solders for electrical connection between semiconductor die and carrier within integrated circuit (flip chip) packages.
16	Lead in linear incandescent lamps with silicate coated bulbs.
17	Lead halide as radiant agent in high intensity discharge (HID) lamps used for professional reprography applications.
18	Lead as activator in the fluorescent powder (1 % lead by weight or less) of discharge lamps when used as sun tanning lamps containing phosphors such as BSP(BaSi2O5:Pb) as well as when used as specialty lamps for diazo-printing reprography, lithography, insect traps, photochemical and curing processes containing phosphors such as SMS((Sr,Ba)2MgSi2O7:Pb)
19	Lead with PbBiSn-Hg and PbInSn-Hg in specific compositions as main amalgam and with PbSn-Hg as auxiliary amalgam in very compact energy saving lamps (ESL).
20	Lead oxide in glass used for bonding front and rear substrates of flat fluorescent lamps used for Liquid Crystal Displays (LCDs).
21	Lead and cadmium in printing inks for borosilicate glasses.
23	Lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with NiFe lead frames and lead in finishes of fine pitch components other than connectors with a pitch of 0.65 mm or less with copper lead frames.
24	Lead in solders for soldering to machined through hole discoidal and planar array ceramic multilayer capacitors.
25	Lead oxide in plasma display panels (PDP) and surface conduction electron emitter displays (SED) used in structural elements; notably in the front and rear glass dielectric layer, the bus electrode, the black stripe, the address electrode, the barrier ribs, the seal frit and frit ring as well as in print pastes.
26	Lead oxide in the glass envelope of black light blue lamps (BLB).
29	Lead bound in crystal glass as defined in Annex I (Categories 1, 2, 3 and 4) of Council Directive 69/493/EEC.
31	Lead in soldering materials in mercury free flat fluorescent lamps (which are used for liquid crystal displays, design or industrial lighting).
32	Lead oxide in seal frit used for making window assemblies for Argon and Krypton laser tubes.
33	Lead in solders for the soldering of thin copper wires of 100 µm diameter and less in power transformers.
34	Lead in cermet-based trimmer potentiometer elements.
37	Lead in the plating layer of high voltage diodes on the basis of a zinc borate glass body.
Mercury	
1	Mercury in compact fluorescent lamps containing 5 mg or less of mercury per lamp.
2	Mercury in straight fluorescent lamps for general purposes no exceeding.
	Halophosphate 10 mg
	Triphosphate with normal lifetime 5 mg
	Triphosphate with long lifetime 8 mg
3	Linear lamps for special purposes
4	Mercury in other lamps not specified in Annex of EU RoHS Directive

List of Substances for which content data should be submitted

Substances to be submitted specified in the REACH regulation

	Substance name	EC No.	Example of CAS No.	Threshold
1	2,4-Dinitrotoluene	204-450-0	121-14-2	0.1 wt%
2	4,4'-Diaminodiphenylmethane (MDA)	202-974-4	101-77-9	0.1 wt%
3	5-tert-butyl-2,4,6-trinitro-m-xylene	201-329-4	81-15-2	0.1 wt%
4	Acrylamide	201-173-7	79-06-1	0.1 wt%
5	Alkanes C10-C13 chloro (short chain chlorinated paraffins, SCCP)	287-476-5	85535-84-8	0.1 wt%
6	Aluminosilicate, refractory ceramic fibres	-	-	0.1 wt%
7	Ammonium dichromate	232-143-1	7789-09-5	0.1 wt%
8	Anthracene	204-371-1	120-12-7	0.1 wt%
9	Anthracene oil	292-602-7	90640-80-5	0.1 wt%
10	Anthracene oil, anthracene paste	292-603-2	90640-81-6	0.1 wt%
11	Anthracene oil, anthracene paste, anthracene fraction	295-275-9	91995-15-2	0.1 wt%
12	Anthracene oil, anthracene paste, distillation lights	295-278-5	91995-17-4	0.1 wt%
13	Anthracene oil, anthracene-low	292-604-8	90640-82-7	0.1 wt%
14	Benzylbutylphthalate(BBP)	201-622-7	85-68-7	0.1 wt%
15	Bis (2-ethylhexyl) phthalate (DEHP)	204-211-0	117-81-7	0.1 wt%
16	Bis (tributyltin) Oxide (TBTO)	200-268-0	56-35-9	0.1 wt%
17	Boric acid	233-139-2 234-343-4	10043-35-3 11113-50-1	0.1 wt%
18	Cobalt dichloride	231-589-4	7646-79-9	0.1 wt%
19	Diarsenic pentaoxide	215-116-9	1303-28-2	0.1 wt%
20	Diarsenic trioxide	215-481-4	1327-53-3	0.1 wt%
21	Dibutyl phthalate (DBP)	201-557-4	84-74-2	0.1 wt%
22	Diisobutyl phthalate (DIBP)	201-553-2	84-69-5	0.1 wt%
23	Disodium tetraborate, anhydrous	215-540-4	1303-96-4 1330-43-4	0.1 wt%
24	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified	247-148-4 221-695-9	25637-99-4 3194-55-6, others	0.1 wt%
25	Lead chromate	231-846-0	7758-97-6	0.1 wt%
26	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	235-759-9	12656-85-8	0.1 wt%
27	Lead hydrogen arsenate	232-064-2	7784-40-9	0.1 wt%
28	Lead sulfochromate yellow (C.I. Pigment Yellow 34)	215-693-7	1344-37-2	0.1 wt%
29	Pitch, coaltar, high temperature	266-028-2	-	0.1 wt%
30	Potassium chromate	232-140-5	7789-00-6	0.1 wt%
31	Potassium dichromate	231-906-6	7778-50-9	0.1 wt%
32	Sodium chromate	231-889-5	7775-11-3	0.1 wt%
33	Sodium dichromate	234-190-3	7789-12-0 10588-01-9	0.1 wt%
34	Tetraboron disodium heptaoxide, hydrate	235-541-3	12267-73-1	0.1 wt%
35	Trichloroethylene	201-167-4	79-01-6	0.1 wt%
36	Triethyl arsenate	427-700-2	15606-95-8	0.1 wt%
37	Tris (2-chloroethyl) phosphate	204-118-5	115-96-8	0.1 wt%
38	Zirconia aluminosilicate, refractory Ceramic Fibres	-	-	0.1 wt%

Purpose and terms of prohibited substances and restricted use substances

1. Purpose of prohibited substances and restricted use substances

When a human body or environment is exposed to these substances, marked health hazard or damage to the ecosystem may result. Therefore, we regulate and restrict the purchase of procurement items (materials and parts) containing these substances to reduce the content of the substances in the products we manufacture, and to minimize its adverse effect on human body or environment.

2. Definition of terms

- **Prohibited substances**

Substances that must not be contained in all procurement items (materials and parts). These substances cannot be manufactured, cannot be used at all or can be used only for purposes specified by regulations, or are highly poisonous. Followings are the prohibited substances:

- 1) Specific substances specified in the Law on the Prohibition of Chemical Weapons and the Regulation of Specific Chemicals
- 2) Substances which cannot be manufactured according to the Industrial Safety and Health Act
- 3) Substances which cannot be manufactured according to the Ozone Layer Protection Law
- 4) Class I specified chemical substances in the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.

- **Restricted use substances**

Substances that must not be contained in procurement items (materials and parts) intended for specific application. They are designated the industry in Japan (/or outside of Japan) tends to restrict its usage although they are not regulated by regulations in Japan. Restricted substances include lead, mercury, cadmium, hexavalent chromium, and compounds of these substances, and PBB (polybrominated biphenyl) and PBDE (polybrominated diphenyl ether), which are banned in the EU RoHS and ELV directives.

Currently, we do not restrict the purchase of these substances for allowable use. However, the range of restriction may be expanded or new restrictions may be added depending of the trend of the industry or if a new regulation is enacted in Japan. Therefore, it is desirable to eliminate or reduce the use or procurement of these substances even for allowable usage.

- **Contained**

The substance may be contained in procurement items purposefully, or a substance of which content in procurement items may exceed threshold specified in laws and regulations even when it is not mixed in them purposefully.

Check Sheet for Environmental Awareness (For Manufactures)

Company's name	
Employee number	
Name	
Title	
Tel	
Email	

Month/Day/Year

XXXXXXXXXXXXXXXXXX

1. *Is the 3rd Party Certification obtained?*

Please check the box corresponding to your selection and if "Yes", please fill out the necessary items as below.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Item	Evaluation Item
Environmental Management System	ISO14001 is obtained.
	Certification Number: _____ Date of Certification: _____
	Other 3rd party certification for environmental management system, is obtained.
	Name of Certification: _____ Certification Number: _____ Date of Certification: _____

2. *Environmental Management System, Organization and Implementation*

If you already obtained "3rd Party Certification" as mentioned above, your answers below are not necessary.

After collection of your response, we might visit your company to review implementation status in some cases.

【How to evaluate】 (1)Yes, (2)Under consideration (will be implemented within 6 months), (3)No

Item	Evaluation item	Evaluation
Environmental Policy	Do you have an Environment Policy which assures continuous improvement and regulatory compliance?	(1)
Organization and Implementation	Do you clearly define a responsible organization and a responsible person for "Environment Promotion" for your company?	
	Do you set a clear objective for environmental conservation?	
	Do you promote energy (raw materials, water, fuel etc.) savings by reducing inputs?	
	Do you dispose of industrial waste in accordance with public law and promote waste reduction activities?	
	Do you practice improvement programs to reduce environmental impacts such as chemical material, drainage and air emissions?	
	As for above environment conservation, do you have a specific program for obtaining your goals?	
Compliance	Are you in compliance with laws?	
Education	Do you promote environmental education and compliance programs to all employees?	
Green Procurement	Do you attempt to purchase items/goods which have less environmental impact? (e.g. Goods which have Eco Mark or Green Mark)	
Packaging	Do you promote recycling activities? (e.g. reusing packing, reworked materials, simple packaging)	
Logistics	Do you promote environmentally friendly modes of transportation such as resource saving, energy saving and low-pollution?	
Complaints responsiveness	Do you have any guidelines for responding to complaints from the neighborhood?	
Others	Do you participate in a local volunteer events? (e.g. Do you participate in cleanup activities in your local community? Or do you have your own activities, such as cleaning your neighborhood (around your plant)?)	

※ This Check Sheet will be used for purposes of internal Green Procurement activities and shall be held in the strictest confidence as per our privacy policy.

Check Sheet for Environmental Awareness (Other than Manufacturing Industry)

Company's name	
Employee number	
Name	
Title	
Tel	
E mail	

Month/Day/Year
XXXXXXXXXXXXXXXXXX

1. Is the 3rd Party Certification obtained?

Please check the box corresponding to your selection and if "Yes", please fill out the necessary items as below.

Yes	No
<input type="checkbox"/>	<input type="checkbox"/>

Item	Evaluation Item
Environmental Management System	ISO14001 is obtained.
	Certification Number: _____ Date of Certification: _____
	Other 3rd party certification for environmental management system, is obtained.
	Name of Certification: _____ Certification Number: _____ Date of Certification: _____

2. Environmental Management System, Organization and Implementation

If you already obtained "3rd Party Certification" as mentioned above, your answers below are not necessary.

After collection of your response, we might visit your company to review implementation status in some cases.

【How to evaluate】 (1)Yes. (2)Under consideration (will be implemented within 6 months). (3)No

Item	Evaluation item	Evaluation
Environmental Policy and Organization	Do you have an Environment Policy? Are you also engaged in reduction of waste products and energy saving as an organization?	(1)
	Do you keep up with environmental regulations of your company and abide by the regulations?	
	Do you promote environmental education and compliance programs to all employees?	
Green Procurement	Do you have a procurement policy for purchasing goods which have less environmental impact?	
	Is the policy well-known by employees?	
	Do you have provisions of procurement which relate to the environment? (e.g. regulation of items)	
Packaging, Logistics	Do you attempt to use environmentally conscious packaging and logistics services?	
Others	Do you participate in a local volunteer events? (e.g. Do you participate in cleanup activities in your local community? Or do you have your own activities, such as cleaning your neighborhood (around your office))?	

※This Check Sheet will be used for purpose of internal Green Procurement activities and shall be held in the strictest confidence as per our privacy policy.

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