

Environmental Requirements for Materials, Parts, and Products (for both RoHS – compliant and pre-RoHS parts)

P/N 46G3772

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Approved by:

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1.0 Scope

1.1 Objectives

Hitachi Global Storage Technologies (Hitachi) adheres to Hitachi Ltd's Environmental Protection Action Guidelines (available on the Internet at <http://greenweb.hitachi.co.jp/en/>) which outlines Hitachi Ltd's commitment to environmental affairs leadership in all of its business activities and establishes objectives regarding Hitachi products and the materials used in them. The Guidelines include:

- 3) Through a concise understanding of how best to resolve environmental problems facing the world, the Company will work to make contributions to society through the development of highly reliable technologies and products that meet those needs.
- 4) The Company gives due consideration to reducing the environmental effects a product will have throughout its entire life cycle, from the R&D and design stages, through to production, logistics, use, and disposal.

To meet these policy objectives, Hitachi has established an **Eco-Product Program (EPP)**, which has established environmental requirements for products that it manufactures and sells. This specification defines environmental requirements for materials, parts, and products supplied for Hitachi applications.

1.2 Definitions

Intentionally introduced or added: means a material deliberately utilized in the formulation of a material or construction of a part, usually to provide a specific characteristic, appearance or quality. A material being unintentionally present means it is there as a naturally-occurring trace impurity or something similar.

Materials: includes those materials that are assembled into a product, such as structural plastics, metals, materials for boards and wafers, etc.; materials that are used on a product, such as coatings, paints, pastes, etc.; and materials that are shipped with products, such as toner, cleaners, etc.

Parts: includes all components and assemblies that are supplied to Hitachi for use in Hitachi applications.

Products: includes all original equipment manufacturer (OEM) manufactured products supplied to Hitachi for sale with the Hitachi logo.

RoHS: the Restriction on Hazardous Substances, a product regulation in the European Union that goes into effect on July 1, 2006, banning the use of cadmium, chromium^{VI}, lead, mercury and some PBB/PBDE fire retardants in products.

Reporting Threshold: the level of a reportable material present in a part above which its presence must be measured and reported to Hitachi. For non-RoHS substances, threshold levels (in ppm or weight %) are based on the weight of the individual part containing the material. For RoHS substances, threshold levels are based on their presence in each non-mechanically-divisible unit and/or individual homogeneous layer (see 1.3.1 Application 4. and 5.).

1.3 Application

This engineering specification applies to all materials, parts, and products supplied for Hitachi applications and/or referencing this specification. Suppliers of components, parts, assemblies, and products must comply with all sections of this specification and all tables.

Suppliers of materials must comply with sections 2.0 - 3.0, including all subsections and tables (See 1.3.1 for RoHS compliance and 3.1 for RoHS reporting).

The supplier is responsible for compliance with this specification as well as for any subcontracted operations and procured materials used in the manufacture of components, parts, assemblies, and products for Hitachi applications. Additionally, it is the supplier's responsibility to comply with all applicable legal requirements.

In the event of conflict between this specification and any Hitachi part drawing requirement, the supplier will immediately notify their Hitachi purchasing representative of any conflicts. Any deviation from the requirements of this specification must be approved in writing by Hitachi's purchasing representative after consultation with Hitachi product development and environmental staff.

1.3.1 Application of RoHS requirements

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Table 1 in this specification contains three RoHS-banned materials designated with an “X”. They are banned in all Hitachi products announced after January 1, 2005, or designated as being RoHS-compliant. Prior versions of this specification (EC H17205 – 29 Jul 03 and earlier) banned the three materials (Lead, Chromium VI and Cadmium) in plastic resins and paints. **The reporting requirements in Table 2 apply to ALL products, RoHS-compliant or not.**

1.4 Document Administration

This document is maintained and controlled by the Hitachi Environment Protection Promotion Center (EPPC). Supplier questions regarding the requirements in this specification should be referred to: EPPC@hitachigst.com.

2.0 Requirements

2.1 Substances Prohibited From Use (Parts, Products & Assemblies, Plastic Resins & Coloring Agents, Paints, Packaging)

Table 1 “Substances Prohibited From Use” lists those chemicals and substances which must not be used in materials, parts, and products for Hitachi applications. They must also not be present in paints, plastic coloring agents or plastic resins used in materials, assemblies, parts, and products for Hitachi applications. Some of these substances are also prohibited from use in manufacturing materials, parts, and products for Hitachi applications (see Section 2.4). [See Table 1 for exceptions.]

2.2 Product Content Documentation - Reportable Substances.

Table 2 “Reportable Substances” lists those chemicals and substances which when intentionally added and/or used, or present as impurities, in materials, parts, and products for Hitachi applications must be reported to Hitachi.

2.3 Substances Prohibited From Use in Manufacturing

Requirements for manufacturing operations are generally beyond the scope of this specification. However, the use of certain materials in manufacturing materials, parts, and products for Hitachi applications may restrict Hitachi’s ability to market products in certain countries or jurisdictions. **Table 3** “Substances Prohibited From Use in Manufacturing” lists chemicals that must not be used by suppliers or any subcontracted suppliers in the manufacture of materials, parts, and products for Hitachi applications. Use of these chemicals for facilities maintenance, testing, or research applications is excluded from this requirement.

2.4 Materials Requirements for Product Protective Packaging

Hitachi has established stringent criteria for design of product packaging in order to minimize the environmental impacts from manufacturing and disposing of packaging materials. In addition to the criteria listed in this standard, all parts that will be used as protective packaging for products made by or for Hitachi must conform to the following engineering specifications:

ES 5897661 (Engineering Specification)	Recyclable Packaging Materials – Selection and Identification
GA21-9261-11	Packaging and Handling – Supplier and Interplant Requirements
ES 37L8024 (Engineering Specification)	Wooden Packaging, Material Treatment & Marking Requirements

2.4.1 Packaging Materials: Restricted Heavy Metals (see ES 5897660)

2.4.1.1. No packaging material or packaging component* shall contain any amount of **lead, cadmium, mercury, or hexavalent chromium** as an element which has been intentionally introduced into its composition as a part of its manufacture, forming, distribution, or printing.

2.4.1.2. The sum concentration level of incidental amounts of lead, cadmium, mercury, and hexavalent chromium present in any packaging material or packaging component* shall not exceed 100 parts per million (**100 ppm**) by weight (0.01%).

*Packaging Component: Any individual assembled part of a package such as, but not limited to, any interior or exterior blocking, bracing, cushioning, weatherproofing, strapping, coatings, closures, inks, and labels.

2.4.2 Packaging Materials: Prohibited Expansion Agents (see ES 1041126)

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The chlorofluorocarbons (CFCs) and hydrogenated chlorofluorocarbons (HCFCs) listed in **Appendix A** are prohibited from *ALL* stages of the expanded foam manufacturing process for all Hitachi packaging. Suppliers of all types of expanded packaging material and chemical components used for the processing of expanded packaging material (incl. foam-in-place urethane components) must ensure materials have not been manufactured with or contain (CFCs) or (HCFCs). Expanded foam materials include, but are not limited to the following types:

- Expanded Polyethylene (EPE)
- Expanded Polypropylene (EPP)
- Expanded Polystyrene (EPS)
- Expanded Polyurethane (EPU)

The process of producing molded foam cushions involves four major steps:

1. Resin Manufacturer: Unexpanded Polymer
2. Resin Manufacturer: Pre-Expansion into Bead Form
3. Foam Molder: Secondary Expansion
4. Foam Molder: Finished Part Molding

Suppliers of expanded foam packaging materials to Hitachi must ensure that CFCs or HCFCs were not used in ANY of the steps by their vendors and sub vendors and should give Hitachi Purchasing written certification to that effect.

2.5 Coding of Plastic Parts

2.5.1 Coding of Plastics Parts

Plastic parts weighting 25 grams or more must be marked in accordance with the International Organization for Standardization's international standard ISO 11469 "Plastics - Generic identification and marking of plastics products." The marking convention of ISO 11469 is outlined in the following sections. Marking is optional for parts weighing less than 25 grams, however, all parts having adequate surface area for coding should be marked. Use of labels with adhesives for coding parts is not allowed.

2.5.2 Coding Method

The marking shall be made by injection molding, stamping, or other means of permanently affixing the information in a readily area on non-decorative or non-functional surfaces. The size of the marking is optional as long as it is clearly legible.

2.5.3 Symbol to signify Recyclability

To indicate that the plastic material used for the fabrication of the part is recyclable, the two symbols ">" and "<" will be used. Marking with these symbols indicates that the part material is recyclable. Recyclable plastic normally means the plastic parts molded and/or fabricated from thermoplastic materials.

2.5.4 Resin Generic Identification

Resin identification will be marked on parts using the symbol for polymer type in between the symbols > and < as shown in this example of polycarbonate/ABS blend: > PC + ABS <

Additives identification shall be marked on parts using the generic symbols from the series of international standards ISO 1043-2, 1043-3 and 1043-4. For example, a blend of polycarbonate/ABS with halogen free organic phosphate flame retardant compounds is marked with the following code: > PC + ABS - FR(40) <

2.6 Use of Preferred Materials

2.6.1 Recycled Plastics

Hitachi prefers the use of recycled plastic wherever possible, especially in parts weighing 25 grams or more.

2.6.2 Non-halogenated plastics

Many procurement policies for government agencies and other public institutions around the world include a preference for products that do not contain halogenated plastics; that is, having plastics which do not contain chlorine or bromine either in the polymer chain or in flame retardant additives. While Hitachi has only prohibited the specific brominated compounds listed in **Appendices B** and **C** of this standard, there are Hitachi approved, flame retarded plastics available which do not contain any halogenated compounds (see **Table 4**). In order to respond to customer demand for this attribute, as appropriate

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for market competitiveness, designers shall consider the use of Hitachi approved, non-halogenated plastics listed in Table 4. [Note that other chemicals are also prohibited in Hitachi products (see **Appendices D, E and F.**)]

2.7 Product Chemical Emissions

Chemical emissions are not a problem with Hitachi products. When chemical emission analysis is required, Hitachi products shall not emit chemicals during normal use conditions which exceed the threshold values or requirements listed in ECMA 328: Detection and Measurement of Chemical Emissions From Electronic Equipment (See <http://www.ecma-international.org/>). If testing is done, a written summary of the test results must be submitted to the product group and the EPPC and included in the PEP.

3.0 Notification Procedures

If the material, part, or product being supplied for Hitachi applications does not meet one or more of the requirements in this specification, the supplier must immediately notify their Hitachi purchasing representative. This also applies if the supplier or a subcontractor(s) makes changes in their operations that will cause a material, part, or product to no longer comply with this specification.

3.1 RoHS –Compliance Measurement Criteria

For compliance to the RoHS directive, suppliers must measure the concentration of cadmium, chromium^{VI}, lead and mercury (and if necessary PBB/PBDE fire retardants) on parts built for Hitachi, using the following testing sequence.

[NOTE: this testing does not apply to lead in aluminum, steel and copper alloys that have specific exemption limits in RoHS (<0.35 wt% in steel alloys, <0.4 wt% in aluminum alloys, and <4 wt% in copper alloys). However, test data showing that any alloy used in Hitachi parts does meet the RoHS exemption must be furnished to Hitachi. Any surface layers on such alloys **MUST** be tested using this procedure.

Lead in electronic ceramic parts (e.g. piezoelectronic devices) and lead in glass of electronic components also does not need to be tested.]

Application:

1. Supplier evaluates the concentration of the RoHS-restricted substances in each supplied part number and reports the results to Hitachi, using the measurement sequence below. (Hitachi will be compliant to the future ISO rule on the evaluation interval.)
2. Metal parts : Concentration of Pb and CrVI to be evaluated in all metal parts. Other restricted substances to be evaluated if in doubt. Exemption : Stainless steel and similar Cr and Pb-containing metals require only composition certification from the metal vendor.
3. Plastic parts : Concentration of Pb and Cd to be evaluated in all plastic parts. Other restricted substances to be evaluated if doubt. Total concentration of Br or PBB, PBDE to be measured if recycled materials are used.
4. Composite parts must be reduced to units that cannot be divided mechanically any more, and then evaluated.
5. For coatings and surface layers, such as paint and plating, every homogeneous layer is to be measured, independent of the base material.
6. Measurements must be done by an ISO17025-qualified laboratory (International), or a laboratory registered for concentration measurement by the Japanese government (Japan local). When ISO determines a rule for laboratories in the future, Hitachi will follow it.
7. Hitachi requires a bulk lead (Pb) analysis of all solders and solder baths by the solder vendor.
8. Measurement data should be made available for any parts fabricated in the same process.

Measurement sequence:

1. Supplier’s laboratory evaluates the concentration on 3 samples with the 1st screening method defined in the Table A.
2. Acceptance criteria : All 3 samples show concentrations less than the Screening Criteria. If all 3 comply, the part is acceptable. If not, go to step 3.

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3. Supplier's laboratory evaluates the concentration on 3 samples with the 2nd screening method in the Table A.
Acceptance criteria : All data show the concentration less than the Screening Criteria.
If all 3 samples fail, evaluate the concentration on 30-50 samples with the 1st or 2nd screening method.
Acceptance criteria : the 3 sigma distribution to be less then the RoHS criteria (see RoHS criteria, below).
4. If all three tests fail, the parts are not acceptable.
5. Results shall be reported to Hitachi using the "RoHS-Compliance Supplier Response Document, #SRD 001."

Note: 1. Suppliers should ask Hitachi to evaluate Cd by XRF in order to check the measurement accuracy.
2. Hitachi 1'st screening criteria for PBB,PBDE are on the assumption of 4-5 Br atom occupation in an average molecule.
3. XRF : X-Ray Fluorescence Spectroscopy, ICP : Inductively coupled plasma, AA : Atomic Absorption Spectrophotometers, GC-MS : gas chromatography - mass spectrometry

RoHS Criteria: A maximum concentration value of 0.1% by weight in homogeneous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE) and of 0.01% by weight in homogeneous materials for cadmium shall be tolerated. Homogeneous material means a unit that cannot be mechanically disjointed in single materials.

Table A	Screening criteria (ppm)	1'st screening method	2'nd screening method	Preparation for 2nd screening
Cd	50	ICP (XRF)	ICP, AA	EN1122 Wet decomposition Dry ashing Microwave decomposition
Pb	500	XRF	ICP, AA	Dry ashing Microwave decomposition
Hg	500		ICP, AA Cold vapor method	Wet decomposition Microwave decomposition
CrVI	500 (as total Cr)		Spectrometric method with 1,5-diphenylcarbazide	JIS H8625
PBB	300 (as total Br)		GC-MS	Toluene extraction after freezing milling
PBDE				

Note: The chemical lists that follow comply with Hitachi Ltd.'s Green Procurement Guidelines for banned and reportable chemicals.

Table 1 shows substances prohibited from use and banned limits for Hitachi products.
Table 2 shows substances that must be reported to Hitachi when used in parts made for Hitachi.
Table 3 shows substances that may not be used in the manufacturing of parts made for Hitachi.

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Table 1. Substances Prohibited from Use in Hitachi Parts, Products and Assemblies, Plastics Resins and Coloring Agents, Paints, and Packaging for Hitachi products.		
Chemical/Substance and Example Compounds¹	Banned Limits	Example CAS Numbers (May not be all inclusive)¹
Asbestos and Asbestos Materials ⁷ Actinolite Amosite (Grunerite) Anthophyllite Chrysotile Crocidolite Tremolite	No intentional addition (N.I.A.)	1332-21-4 77536-66-4 12172-73-5 77536-67-5 12001-29-5 12001-28-4 77536-68-6
Azo-based chemicals ⁷	N.I.A.	(see Appendix F)
Beryllium and its compounds ⁷ Beryllium-Aluminum alloy Beryllium oxide Beryllium copper Beryllium chloride, fluoride, hydroxide, phosphate, sulfate, Beryllium sulfate tetrahydrate	N.I.A. and Impurities > 0.02wt% (200 ppm)	7440-41-7 12770-50-2 1304-56-9 11133-98-5 7787-47-5 7787-49-7 13327-32-7 13598-15-7 13510-49-1 7787-56-6
◀ Cadmium and its compounds ⁷ Cadmium carbonate, chloride, fluoroborate, nitrate Cadmium oxide, sulfate, sulfide	N.I.A. and Impurities > 75 ppm	7440-43-9 513-78-0 10108-64-2 14486-19-2 10325-94-7 1306-19-0 10124-36-4 1306-23-6
Chloroparaffins ^{3,7} (Short chain chloroparaffins: 10<C<13)	N.I.A.	63449-39-8 85535-84-8 8029-39-8
◀ Chromium (VI) and its Compounds ^{2,7} Barium chromate Calcium chromate Chromium trioxide Lead chromate Sodium chromate Sodium dichromate Strontium chromate Zinc chromate	N.I.A. and Impurities > 0.1 wt% (1000 ppm)	18540-29-9 10294-40-3 13765-19-0 1333-82-0 7758-97-6 7775-11-3 10588-01-9 7789-06-2 13530-65-9
Halogenated Aromatic Substances ² (Dioxins and Furans)	N.I.A.	(See Appendix D)
Halogenated Naphthalenes ^{2,7}	N.I.A.	70776-03-3 (esp. in capacitors and transformers)
Hydrofluorocarbons (HFCs) ⁵ (CFC substitutes)	N.I.A.	Perfluorocarbons (Disk lube is not included here)
Hitachi Specific Chemicals (banned)	N.I.A.	(See Appendix E)
◀ Lead and Lead Compounds ^{4,6,7} (Except Flip-chip BLM and other RoHS exempted applications / uses) Lead sulfate, carbonate, hydrocarbonate, acetate Lead (II) acetate, trihydrate, phosphate, selenide organo-lead compounds, incl. Tetraethyl and Tetramethyl lead	N.I.A. except for RoHS exempted applications & Impurities	7439-92-1 7446-14-2 598-63-0 1319-46-6 301-04-2 6080-56-4 7446-27-7 12069-00-0 (esp. 78-00-2, 75-74-1)
Mercury and Mercury Compounds, including organo-mercury. ⁷ Mercuric chloride, bichloride, sulfate, nitrate, oxide, sulfide Alkyl, chlorophenyl, diethyl, and dimethyl mercury, etc.	N.I.A. & Impurities > 0.1 wt%	7439-97-6 (incl. 100-56-1, 627-44-1, 593-74-8) 33631-63-9 7487-94-7 7783-35-9 10045-94-0 21908-53-2 1344-48-5 100-56-1
Non-chlorinated phenyls / biphenyls / organics 4-Aminobiphenyl 4-Nitrobiphenyl Benzene Benzidine (p-diaminodiphenyl)	N.I.A.	92-67-1 92-93-3 71-43-2 92-87-5
Three types of Organo-tin compounds: Bis(tri-n-butyltin) oxide(TBTO) ⁷ , Tri-butyltin (TBT)s ⁷ , Triphenyltin oxide / hydroxide ^{4,7}	N.I.A.	56-35-9 76-87-9, 639-58-7
Ozone Depleting Chemicals ⁷	N.I.A.	(see Appendix A)
Polybrominated biphenyls (PBBs) ⁷	N.I.A. / > 0.1 wt% (1000 ppm).	(see Appendix B)
Polybrominated diphenyl ethers (PBDEs) ⁷		(see Appendix C)
Polychlorinated biphenyls (PCBs) ⁷	N.I.A.	1336-36-3 59536-65-1

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Other Polychlorinated phenols ² and terphenyls Pentachlorophenol (PCP) Pentachlorophenol, sodium salt	N.I.A.	(incl. 61788-33-8, 26140-60-3 87-86-5 131-52-2)
Polyvinyl chloride (PVC) ⁷	N.I.A.	9002-86-2 (wire insulation exempt, but has to be reported.)
Radioactive substance (Any) ⁷	N.I.A.	
Notes: (1) Examples of common compounds and their CAS numbers are listed for reference, however, list is not exhaustive and all compounds of this material are restricted. (2) From Swiss Ordinance on Substances (3) ³ From Danish Restriction of Hazardous Substances Law "Statutory Order no. 552 of 2 nd July 2002 Regulating Certain Industrial Greenhouse Gases" (4) Includes plastics used in electrical components and cables. (5) Including resins. (6) From EU RoHS Directive (7) JGPSSI substances (8) N.I.A. = No Intentional Addition		

Note: In boxes with more than 1 CAS#, highlighted CAS numbers are in the Hitachi Managed Substances list.

Note: For Table 2 substances, see section 3.1 for RoHS analysis data that must be reported to Hitachi.

Table 2 Reportable Substances (Any intentional usage and known contents must be reported to Hitachi)			
Chemical Category /Example Compounds¹	Example CAS #'s (not all-inclusive)¹	What to Report	Limit Applies To & Industry Uses
1-1 Antimony and its compounds ⁷ Antimony trioxide Antimony pentoxide	7440-36-0 1309-64-4 1314-60-9	Any known contents	- Solder alloy. - Antimony trioxide as flame retardant often used with brominated flame retardants in plastics.
1-2 Arsenic and its compounds ⁷ Gallium arsenide Calcium arsenate Calcium arsenite Arsenic pentoxide Arsenic trioxide Potassium arsenite Potassium arsenate Lead arsenate	7440-38-2 1303-00-0 7778-44-1 27152-57-4 1303-28-2 1327-53-3 10124-50-2 7784-41-0 3687-31-8	Any known contents (A.K.C.)	- Dopant in semiconductor manufacture. - Gallium arsenide is used as semiconductor substrate.
1-3 Beryllium and its compounds ⁷	7440-41-7 7787-49-7	>0.01 wt% (100 ppm) + Any known contents	
2-2 Bismuth, its alloys and compounds ⁷	7440-69-9	Any known contents	Solder alloy
1-4 Cadmium and its compounds ⁷	7440-43-9	>0.005 wt% (50 ppm) + Any known contents	Applies to all plastic parts, every homogeneous layer. (RoHS)
1-5 Chromium III compounds (exclude Cr(VI) & metal) 1-6 Chromium (VI) and its compounds ⁷	See table 1.	Report all Cr >500 ppm (total Cr) + any known contents	Applies to all metal parts, every homogeneous layer. (RoHS)
2-1 Cobalt and its compounds	7440-48-4	Any known contents	
2-1 Cyanide and its compounds, cyanogens	57-12-5	Any known contents	
1-15 Flame retardant materials Organo-phosphorus compounds TBBA (Tetrabromo bisphenol A) Other brominated or chlorinated flame retardants ⁷ Other organic or inorganic substances used as flame retardants	79-94-7	Report all Br >300 ppm (total Br) , plus any known contents for all flame retardants.	Provide name, weight, CAS number or ISO 1043-4 code, application in product (PBB's and PBDE's are RoHS and are banned in Table 1.)
1-7 Lead and its compounds (RoHS subjected) ⁷ 1-7-1 Lead and its compounds (RoHS exempted) [reported separately, include weight as lead]	See table 1.	> 0.05 wt% (500 ppm) + Any known contents	Applies to all parts, every homogeneous layer. (RoHS)
1-11 Magnesium and Magnesium alloys ⁷ Magnesium oxide Magnesium sulfate Magnesium (II) nitrate Magnesite	7439-95-4 1309-48-4 7487-88-9 10377-60-3 13717-00-5	Any known contents	Surface coating Computer casings
1-8 Mercury and its compounds ⁷ 1-9 Alkyl mercury compounds (reported separately)		>0.05 wt% (500 ppm) + Any known contents	(RoHS)

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Chemical Category /Example Compounds ¹	Example CAS #'s (not all-inclusive) ¹	What to Report	Limit Applies To & Industry Uses
1-10 Nickel ⁷ 1-10-1 Nickel compounds (reported separately) ⁷ Nickel acetate Nickel carbonate Nickel carbonyl Nickel hydroxide Nickelocene Nickel oxide Nickel subsulfide	7440-02-0 373-02-4 3333-67-3 13463-39-3 12054-48-7/11113-74-9 1271-28-9 1313-99-1 12035-72-2	Any known contents	Surface finish Anti-corrosion treatment Seed layer for immersion-less gold Stainless steel components
2-9 Organo-tin compounds	See table 1.	Any known contents	
1-16 Phthalates ⁷ Diisononyl Phthalate (DINP) Di-sec-octyl phthalate (DEHP) Dibutyl phthalate (DBP) Diisodecyl phthalate Bis(n-octyl) phthalate (DNOP) Butyl benzyl phthalate (BBP)	28553-12-0 117-81-7 84-74-2 26761-40-0 117-84-0 85-68-7	Any known contents	Plasticizer PVC electrical cables
1-14 Polyvinyl chloride (PVC) ⁷ 1-13 Other chlorinated polymers (report separately)	9002-86-2	Any known contents	Plastic / Housings Electrical cable insulation Flexible CD jackets
1-19 Radioactive substance (Any) ⁷		Any known contents	Promethium 147 as an over-voltage device
1-12 Selenium and its compounds ⁷ Hydrogen selenide Sodium selenide Selenium dioxide Sodium selenate Dimethyl selenide Selenium oxide	7782-49-2 7783-07-5 1313-85-5 7446-08-4 10112-94-4 593-79-3 12640-89-0	Any known contents	Diodes and light detectors (lead selenide). Historically used as photoelectric coating.

Material	Example CAS #'s	What to Report
2-5 Barium and its compounds (Barium Chromate)	7440-39-3 (10294-40-3)	Any known contents
1-17 Boron and boride compounds (Boron trifluoride, Boron trichloride)	7440-42-8 (7637-07-2,10294-34-5)	Any known contents
2-11 Copper ⁷ 2-11-1 Copper compounds (reported separately) ⁷	7440-50-8 (13967-50-5)	Any known contents
2-6 Gold and its compounds ⁷ (Gold(I)Potassium Cyanide)	(13967-50-5)	Any known contents
2-13 Manganese and its compounds	7439-96-5, 12079-65-1, 638-38-0, 1313-13-9, 10124-54-6, 598-62-9, 6156-78-1, 10034-96-5, 13446-34-9, 10377-66-9,	Any known contents
2-8 Palladium and its compounds ⁷		Any known contents
2-7 Silver and its compounds (Silver cyanide)	7440-22-4, (506-64-9)	Any known contents
2-3 Tellurium and its compounds	13494-80-9	Any known contents
2-4 Thallium and its compounds	7440-28-0	Any known contents
2-10 Tin and its compounds (Three types of organo-tins are banned)	7440-31-5 ++	Any known contents
2-12 Zinc and its compounds	7440-66-6	Any known contents
1-18 Azo-based chemicals	(see Appendix F)	Any known contents
2-14 artificial mineral fibers	(see Table 1)	Any known contents
2-15 cyanogens and cyanide compounds (inorganic compounds only)	460-19-5, 506-77-4, 420-04-2 + metal cyanides	Any known contents
2-16 fluorine compounds (inorganic compounds only) [As, Cd, Pb, Sn, organo-tin, Be, Se, S, B, N and includes SF ₆]	2551-62-4 +others	Any known contents
2-17 ammonium and amine salts	101-14-4, 134-32-7, 2321-53-1, 7789-09-5	Any known contents

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2- 18	plastic monomer residues			
a	acryl amide		79-06-1	Any known contents
b	acrylonitrile		107-13-1	
c	ethylene and ethylene oxide		74-85-1	
d	phenol		108-95-2	
e	propylene and propylene oxide		115-07-1	
f	styrene		100-42-5	
g	tolylene diisocyanate (TDI)		26471-62-5	
h	polyvinyl chloride			
i	others			
2- 19	polycyclic aromatic hydrocarbon				Any known contents
a	naphthalene		91-20-3	
b	1-methyl naphthalene		90-12-0	
c	2-methyl naphthalene		7297-45-2	
2- 20	ethylene glycol ethers and acetates			Any known contents
a	ethylene glycol monoacetate	2-hydroxyethyl acetate	542-59-6 *	
b	ethylene glycol monoethyl ether	ethyl cellosolve / ethoxyethanol ¹	110-80-5	
c	ethylene glycol monobutyl ether	butyl cellosolve / butoxyethanol	111-76-2	
d	ethylene glycol monomethyl ether	methyl cellosolve / methoxyethanol ¹	109-86-4	
e	ethylene glycol monoethyl ether acetate	ethylC acetate/ethoxyethyl A ¹	111-15-9	
f	ethylene glycol monomethyl ether acetate	methylC acetate/methoxyethyl A ¹	110-49-6	
g	diethylene glycol dimethyl ether	diglyme / 2 (2methoxyethyl ether) ¹	111-96-6	
H	others		* on STR list, not in AgreeNet	
2- 21	Perfluoro compounds and Hydro fluoro compounds (CFC substitutes)				Any known contents
a	PFC-14	tetrafluoromethane	75-73-0	
b	PFC-116	hexafluoroethane	76-16-4	
c	PFC-218	octafluoropropane	76-19-7	
d	PFC-C318	cyclo-octafluorobutane	115-25-3	
e	HFC-32	difluoromethane	75-10-5	
f	HFC-125	pentafluoroethane	354-33-6	
g	HFC-134a	1,1,1,2 tetrafluoroethane	811-97-2	
h	HFC-143a	1,1,1 trifluoroethane	420-46-2	
i	others			
2- 22	nitro compounds			Any known contents
a	picric acid (tri nitro phenol)		88-89-1	
b	nitro biphenyl compounds		86-00-0 2113-58-8 +	
c	N-nitrosodi(n-butyl)amine		924-16-3	
d	N-nitrosodi(n-propyl)amine		621-64-7	
e	N-nitrosodiethylamine		55-18-5	
f	N-nitrosodiphenylamine		86-30-6	
g	N-nitrosodimethylamine		62-75-9	
h	others			
2-23	amine and amide compounds			Any known contents
a	N,N-dimethylacetamide and N-methylacetamide		127-19-5 79-16-3	
b	N,N-dimethylformamide and N-methylformamide		123-39-7 68-12-2	
c	trimethylamine		75-50-3	
d	diethylamine and dimethylamine		109-89-7 124-40-3	
e	others			
2-24	halogenated compounds excluding flame retardants or plastic monomers			Any known contents
a	dioxins and dibenzofuranes	(See Banned List – Table 1)		
b	o-chlorotoluene	2-chloro 1-methylbenzene	95-49-8	
c	chlorobenzene compounds		108-90-7	
d	hexachloro butadiene		87-68-3	
e	others			
2-25	solvent residue	(See Banned List – Table 1)		Any known contents
a	benzene		71-43-2	
b	formaldehyde		50-00-0	
c	acetaldehyde		75-07-0	
d	n-butyl aldehyde		123-72-8	
e	others			
2-26	ethyleneimine		158-56-4	Any known contents
2-27	dioctyl adipate (DOA)	di (2-ethylhexyl) adipate	103-23-1	Any known contents
2-28	methylcyclohexanol		25639-42-3 589-91-3	Any known contents
			590-67-0 583-59-5 591-23-1	
2-29	Thiuram (tetramethylthiuram disulfide)		137-26-8	Any known contents

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2-30	hydrazine	302-01-2	Any known contents
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Note: In boxes with more than 1 CAS#, highlighted CAS numbers are in the Hitachi Managed Substances list.

Note 2: For Table 2 substances, see section 3.1 for RoHS analysis data that must be reported to Hitachi.

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Chemical/Substance	CAS Number
Ozone depleting chemicals (see Appendix A)	(Includes manufacturing done for Hitachi by suppliers/vendors)
Ethylene based glycol ethers	(Applies to manufacturing done in Hitachi plants)
2-Methoxyethanol (Methoxyethanol)	109-86-4 (32718-54-0)
Methoxyethanol acetate	110-49-6
2-Ethoxyethanol	110-80-5 DR ² 96231-36-6
Ethoxyethanol acetate	111-15-9
Diethylene glycol dimethyl ether	111-96-6 DR ² 142939-39-7 DR ² 54331-70-8 DR ² 70992-86-8

¹Note: Manufacturing processes do not include facilities equipment or systems such as chillers and fire suppression systems.
²Note: DR denotes a deleted registry number that was replaced with another registry number.

GE Cycoloy C-2950 (PC/ABS)	23-931J(4)	Bayer Bayblend FR-110 (PC/ABS)	23-931J(1)
GE Cycoloy C-2800 (PC/ABS)	23-931H(4)	Bayer Bayblend FR 2010 (PC/ABS)	23-931P(3)
GE Lexan 915R (Polycarbonate)	23-943W(2)	Cheil Starex NH-0951 (ABS)	23-591R(1)
		Cheil Polyac PA-757 - HB grade	23-582C(1)

Name or Chemical Formula	Chemical Abstract Services (CAS) Number
Chlorofluorocarbons (CFCs):	
Trichlorofluoromethane (CFC-11) and its isomers	75-69-4 DR ² 62185-70-0 DR ² 79620-41-0 DR ² 83589-40-6 DR ² 91315-61-6
Dichlorodifluoromethane (CFC-12) and its isomers	75-71-8 DR ² 185009-39-6 DR ² 62185-71-1
Chlorotrifluoromethane (CFC-13) and its isomers	75-72-9 185009-43-2
Pentachlorofluoroethane (CFC-111) and its isomers	354-56-3 29756-45-4
Tetrachlorodifluoroethane (CFC-112) & isomers (2-difluorotetrachloroethane)	76-12-0 76-11-9
Trichlorotrifluoroethane (CFC-113) and its isomers	76-13-1 DR ² 39349-94-5 DR ² 56996-61-3 DR ² 354-58-5 57762-34-2 DR ² 59948-56-0
Dichlorotetrafluoroethane (CFC-114) and its isomers	76-14-2 374-07-2
Monochloropentafluoroethane (CFC-115) and its isomers	76-15-3 DR ² 12770-91-1
Heptachlorofluoropropane (CFC-211) and its isomers	422-78-6 135401-87-5
Hexachlorodifluoropropane (CFC-212) and its isomers	3182-26-1
Pentachlorotrifluoropropane (CFC-213) and its isomers	2354-06-5 134237-31-3
Tetrachlorotetrafluoropropane (CFC-214) and its isomers	29255-31-0 2268-46-4
Trichloropentafluoropropane (CFC-215) and its isomers	1599-41-3 4259-43-2 76-17-5
Dichlorohexafluoropropane (CFC-216) and its isomers	661-97-2
Chloroheptafluoropropane (CFC-217) and its isomers	422-86-6 76-18-6
Halons:	
Bromochlorodifluoromethane (Halon-1211) and its isomers CF ₂ ClBr	353-59-3 11104-73-7
Bromotrifluoromethane (Halon-1301) and its isomers CF ₃ Br	75-63-8 62395-25-9
Dibromotetrafluoroethane (Halon-2402) and its isomers C ₂ F ₄ Br ₂	124-73-2 DR ² 76199-55-8
Carbon tetrachloride	56-23-5
1,1,1-trichloroethane (methyl chloroform) and its isomers	71-55-6 DR ² 74552-83-3
Bromomethane (methyl bromide)	74-83-9 74-00-5

Note: In boxes with more than 1 CAS#, highlighted CAS numbers are in the Hitachi Managed Substances list.

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Hydrobromofluorocarbons (HBFCs):				
Bromodifluoromethane and its isomers		CHF ₂ Br ₂	HBFC-22B1 (FM-100)	1511-62-2 373-52-4 1868-53-7
CH ₂ FBr	Bromofluoromethane	.....	373-52-4 ..	
	Dibromofluoromethane	(Hitachi Ltd. Requirement)...		1868-53-7
C ₂ HFBr ₄	Tetrabromofluoroethane			
C ₂ HF ₂ Br ₃	Tribromodifluoroethane			354-04-1 DR ² 66542-88-9
C ₂ HF ₃ Br ₂	Dibromotrifluoroethane	HBFC 123B2	..... 354-04-1...	
C ₂ HF ₄ Br	Bromotetrafluoroethane	HBFC 124B1		
C ₂ H ₂ FBr ₃	Tribromofluoroethane			75-82-1
C ₂ H ₂ F ₂ Br ₂	Dibromodifluoroethane	.....	75-82-1 ...	421-06-7
C ₂ H ₂ F ₃ Br	Bromotrifluoroethane	(Trifluorobromoethane) ...	421-06-7 ...	358-97-4
C ₂ H ₃ FBr ₂	Dibromofluoroethane	.....	358-97-4 ..	420-47-3 359-07-9
C ₂ H ₃ F ₂ Br	Bromodifluoroethane	.....	359-07-9 ..	762-49-2
C ₂ H ₄ FBr	Bromofluoroethane	HBFC 124B1	.....762-49-2 ...	
C ₃ HFBr ₆	Hexabromofluoropropane			
C ₃ HF ₂ Br ₅	Pentabromodifluoropropane			
C ₃ HF ₃ Br ₄	Tetrabromotrifluoropropane			
C ₃ HF ₄ Br ₃	Tribromotetrafluoropropane			
C ₃ HF ₅ Br ₂	Dibromopentafluoropropane			2252-78-0
C ₃ HF ₆ Br	Bromohexafluoropropane	.....	2252-78-0...	
C ₃ H ₂ FBr ₅	Pentabromofluoropropane			
C ₃ H ₂ F ₂ Br ₄	Tetrabromodifluoropropane			
C ₃ H ₂ F ₃ Br ₃	Tribromotrifluoropropane			
C ₃ H ₂ F ₄ Br ₂	Dibromotetrafluoropropane			
C ₃ H ₂ F ₅ Br	Bromopentafluoropropane			
C ₃ H ₃ FBr ₄	Tetrabromofluoropropane			
C ₃ H ₃ F ₂ Br ₃	Tribromodifluoropropane			431-21-0
C ₃ H ₃ F ₃ Br ₂	Dibromotrifluoropropane	.....	432-21-0 ...	
C ₃ H ₃ F ₄ Br	Bromotetrafluoropropane			
C ₃ H ₄ FBr ₃	Tribromofluoropropane			460-25-3
C ₃ H ₄ F ₂ Br ₂	Dibromodifluoropropane	.....	460-25-3 ...	
C ₃ H ₄ F ₃ Br	Bromotrifluoropropane			
C ₃ H ₅ FBr ₂	Dibromofluoropropane			
C ₃ H ₅ F ₂ Br	Bromodifluoropropane			352-91-0 1871-72-3
C ₃ H ₆ FBr	Bromofluoropropane	.....	352-91-0 ..	

Hydrochlorofluorocarbons (HCFCs):					
Dichlorofluoromethane (HCFC-21)			75-43-4	DR ² 39289-28-6	
Chlorodifluoromethane (HCFC-22)			75-45-6	DR ² 73666-77-0	DR ² 134191-96-1
Chlorofluoromethane (HCFC-31)				593-70-4	
Tetrachlorofluoroethane (HCFC-121) and its isomers		130879-71-9	DR ² 134237-32-4³	354-11-0	354-14-3
Trichlorodifluoroethane (HCFC-122) and its isomers			41834-16-6	55949-46-7 354-21-2 354-12-1	DR ² 134237-33-5 ³ DR ² 62549-18-2 354-15-4
Dichlorotrifluoroethane (HCFC-123) and its isomers		34077-87-7	90454-18-5	306-83-2	354-23-4 812-04-4
Chlorotetrafluoroethane (HCFC-124) and its isomers			63938-10-3	2837-89-0	354-25-6
Trichlorofluoroethane (HCFC-131) and its isomers			27154-33-2	134237-34-6³	359-28-4
			90134-98-8	811-95-0	2366-36-1
Dichlorodifluoroethane (HCFC-132) and its isomers		25915-78-0	55494-45-6	31153-51-2	33579-37-2 33489-30-4
			1649-08-7	1842-05-3	471-43-2 431-06-1
Chlorotrifluoroethane (HCFC-133) and its isomers			1330-45-6	DR ² 38097-47-1	431-07-2 421-04-5 75-88-7
Dichlorofluoroethane (HCFC-141) and its isomers			25167-88-8	1717-00-6	430-57-9 430-53-5
Chlorodifluoroethane (HCFC-142) and its isomers		25497-29-4	DR ² 58561-84-5	DR ² 27175-71-9	55949-44-5
			338-65-8	75-68-3	DR ² 65762-25-6 338-64-7
Hexachlorofluoropropane (HCFC-221) and its isomers			29470-94-8	134237-35-7³	431-79-8
			422-40-2	422-26-4	422-28-6
Pentachlorodifluoropropane (HCFC-222) and its isomers		116867-32-4		134237-36-8³	421-82-3
			431-80-1	422-49-1	422-30-0 422-27-5

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Tetrachlorotrifluoropropane (HCFC-223) and its isomers	29470-95-9 134237-37-9³ 54002-59-4 431-83-4 431-81-2 422-52-6 422-50-4 422-41-3 422-35-5 422-29-7
Trichlorotetrafluoropropane (HCFC-224) and its isomers	127564-91-4 134237-38-0³ 53063-53-9 53063-52-8 431-84-5 422-54-8 422-53-7 422-51-5 422-47-9 422-42-4 422-32-2
Dichloropentafluoropropane (HCFC-225) and its isomers	127564-92-5 136013-79-1 422-56-0 507-55-1 128903-21-9 111512-56-2 111512-55-1 111512-51-7 13474-88-9 431-86-7 422-48-0 422-44-6
Chlorohexafluoropropane (HCFC-226) and its isomers	28987-04-4 134308-72-8³ 51346-64-6 431-87-8 422-57-1 422-55-9 359-58-0
Pentachlorofluoropropane (HCFC-231) and its isomers	134190-48-0³ 421-94-3
Tetrachlorodifluoropropane (HCFC-232)	127564-82-3 134237-39-1 67879-59-8 1112-14-7 677-54-3 460-89-9
Trichlorotrifluoropropane (HCFC-233) and its isomers	61623-04-9 134237-40-4³ 131221-36-8 131211-71-7 54377-32-1 54306-56-8 13058-99-6 7125-84-0 7125-83-9 431-51-6 421-99-8 421-95-4 333-26-6
Dichlorotetrafluoropropane (HCFC-234) and its isomers	127564-83-4 76140-39-1 70341-81-0 70192-63-1 64712-27-2 53149-65-8 422-00-5 53063-54-0 17705-30-5 4071-01-6 425-94-5
Chloropentafluoropropane (HCFC-235) and its isomers	108662-83-5 134237-83-5 ³ 134237-41-5 134251-06-2 28103-66-4 679-99-2 677-55-4 460-92-4 422-02-6
Tetrachlorofluoropropane (HCFC-241) and its isomers	134190-49-1³ 84816-05-7 23153-22-2 666-27-3 7126-06-9 3175-26-6 3175-25-5
Trichlorodifluoropropane (HCFC-242) and its isomers	127564-90-3 134237-42-6³ 460-63-9 7164-14-9 1112-13-6 431-24-3 1112-05-6 7126-05-8 7126-04-7
Dichlorotrifluoropropane (HCFC-243)	116890-51-8 134237-43-7³ 7126-01-4 7125-99-7 7126-00-3 338-75-0 67406-68-2 70192-70-0 460-69-5
Chlorotetrafluoropropane (HCFC-244) and its isomers	134190-50-4³ 117970-90-8 679-85-6 67406-66-0 2730-64-5 19041-02-2 421-73-8 421-75-0
Trichlorofluoropropane (HCFC-251) and its isomers	134190-51-5³ 84847-80-3 84847-79-0 76985-34-7 76985-33-6 67832-50-2 67832-44-4 7126-16-1 70192-89-1 818-99-5 76937-36-5 421-41-0 3175-24-4
Dichlorodifluoropropane (HCFC-252)	134190-52-6³ 1112-01-2 131404-17-6 121612-64-4 7126-15-0 70192-74-4 82578-00-5 819-00-1 111483-26-2 1112-36-3
Chlorotrifluoropropane (HCFC-253) and its isomers	26588-23-8 134237-44-8³ 421-47-6 460-35-5 134251-05-1 69202-10-4 121612-65-5 83124-56-5 70192-76-6 56758-54-4
Dichlorofluoropropane (HCFC-261) and its isomers	127404-11-9 134237-45-9³ 7779-56-6 53074-31-0 53074-30-9 7799-55-5 420-97-3 453-01-0 83124-60-1 816-38-6
Chlorodifluoropropane (HCFC-262) and its isomers	134190-53-7³ 421-02-3 430-93-3 DR ² 52685-67-3 83124-57-6 430-96-6 37161-81-2 102738-79-4 420-99-5
Chlorofluoropropane (HCFC-271) and its isomers	134190-54-8³ 430-55-7 430-46-6 462-38-4 20372-78-5 420-44-0

Notes: ¹ Manufacturing processes do not include facilities equipment or systems such as chillers and fire suppression systems.

² DR denotes a deleted registry number that was replaced with another registry number.

³ Chemical to which Chemical Abstract Service (CAS) assigned registry number based on premise that it was a trade name, although chemical may be the same as another on already listed.

Note: In boxes with more than 1 CAS#, highlighted CAS numbers are in the Hitachi Managed Substances list.

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Appendix B: Polybrominated biphenyls (PBBs)

Bromobiphenyl	20520-70-5, 2113-57-7, 92-66-0
Decabromobiphenyl	136540-90-6
Dibromobiphenyl	92-86-4
Heptabromobiphenyl	
Hexabromobiphenyl	59080-40-9, 36355-01-8 , 67774-32-7
Nonabromobiphenyl	
Octabromobiphenyl	61288-13-9
Pentabromobiphenyl	
Polybrominated Biphenyl	59536-65-1
Tetrabromobiphenyl	40088-45-7
Tribromobiphenyl	

Appendix C: Polybrominated diphenyl ethers (PBDEs)

Bromobiphenyl Ether	101-55-3
Decabromobiphenyl Ether / Oxide	1163-19-5
Dibromobiphenyl Ether	2050-47-7
Heptabromobiphenyl Ether	68928-80-3
Hexabromobiphenyl Ether	36483-60-0
Nonabromobiphenyl Ether	63936-56-1
Octabromobiphenyl Ether	32536-52-0
Pentabromobiphenyl Ether	32534-81-9
Tetrabromobiphenyl Ether	40088-47-9
Tribromobiphenyl Ether	49690-94-0

Appendix D: Halogenated Aromatic Substances (Dioxins and Furans)

1,2,3,4,6,7,8,9-Octachlorodibenzodioxin (CDD)	3268-87-9
1,2,3,4,6,7,8-Hepta-CDD	35822-46-9
1,2,3,4,7,8-Hexa-CDD	39227-28-6
1,2,3,6,7,8-Hexa-CDD	57653-85-7
1,2,3,7,8,9-Hexa-CDD	19408-74-3
1,2,3,7,8-Penta-CDD	40321-76-4
2,3,7,8-Tetra-CDD	1746-01-6
1,2,3,4,6,7,8-Heptachlorodibenzofuran (CDF)	67562-39-4
1,2,3,4,6,7,9-Hepta-CDF	70648-25-8
1,2,3,4,7,8,9-Hepta-CDF	55673-89-7
1,2,3,6,7,8-Hexa-CDF	57117-44-9
1,2,3,4,7,8-Hexa-CDF	70648-26-9
1,2,3,7,8,9-Hexa-CDF	72918-21-9
2,3,4,6,7,8-Hexa-CDF	60851-34-5
1,2,3,7,8-Penta-CDF	57117-41-6
2,3,4,7,8-Penta-CDF	57117-31-4
2,3,7,8-Tetra-CDF	51207-31-9
1,2,3,4,6,7,8,9-Octa-CDF	39001-02-0
1,2,3,6,7,8-Hexabromodibenzo-dioxin (BDD)	110999-45-6
1,2,3,4,7,8-Hexa-BDD	110999-44-5
1,2,3,7,8,9-Hexa-BDD	110999-46-7
1,2,3,7,8-Penta-BDD	109333-34-8
2,3,7,8-Tetra-BDD	50585-41-6
1,2,3,7,8-Pentabromodibenzofuran (BDF)	107555-93-1
1,2,3,7,8-Penta-BDF	109333-34-8
2,3,4,7,8-Penta-BDF	131166-92-2
2,3,7,8-Tetra-BDF	67733-57-7

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Appendix E: Hitachi Specific Chemicals (not including those on other lists in this spec. that are also banned)

1,1,2-Trichloroethane	aliphatic CHC	79-00-5
1,2-Dichloroethane	ethylene dichloride - C ₂ H ₄ Cl ₂	107-06-2
cis-1,2-Dichloroethane	C ₂ H ₂ Cl ₂	156-59-2
1,3-Dichloropropene	C ₃ H ₄ Cl ₂	542-75-6
		75-26-3
2-Bromopropane	isopropyl bromide C ₃ H ₇	542-88-1
		118-74-1
Bis(chloromethyl)ether		127-18-4
Hexachlorobenzene	perchlorobenzene C ₆ Cl ₆	79-01-6
		75-35-4
Tetrachloroethylene		
		309-00-2
Trichloroethylene	C ₂ HCl ₃	57-74-0
Vinylidene Chloride	CH ₂ =CCl ₂	50-29-3
		60-57-1
Aldrin		72-20-8
Chlordane		32241-08-0
DDT		1335-87-1
Dieldrin		2234-13-1
Endrin		1321-64-8
Heptachloro naphthalene		1335-88-2
Hexachloro naphthalene		1321-65-9
Octachloro naphthalene		
Pentachloro naphthalene		74-90-8
Tetrachloro naphthalene		505-60-2
Trichloro naphthalene		789-02-6
		122-34-9
Hydrogen Cyanide		62-55-5
Mustard Gas		28249-77-6
O,p' DDT		137-26-8
Simazine		
Thioacetamide		
Thiobencarb		
Thiuram		

Appendix F: Azo-Based Chemicals

Benzidine and its salts	92-87-5
4-Aminodiphenyl and its salts	92-67-1
4-Chloro-o-toluidine (4-chloro-2-methylaniline)	95-69-2
2-Naphthylamine	91-59-8
o-Aminoazotoluene	97-56-3
2-Amino-4-nitrotoluene	99-55-8
p-Chloroaniline	106-47-8
2,4-Diaminoanisole	615-05-4
4,4'-Diaminodiphenylmethane	101-77-9
3,3'-Dichlorobenzidine	91-94-1
3,3'-Dimethoxybenzidine	119-90-4
3,3'-Dimethylbenzidine	119-93-7
3,3'-Dimethyl-4,4' diaminodiphenylmethane	838-88-0
p-Cresidine (5-Methyl-p-Anisidine)	120-71-8
4,4'Methylenebis-(2-chloroaniline)	101-14-4
4,4'-Oxydianiline	101-80-4
4,4'-Thiodianilene (4,4'-thiobisbenzenamine)	139-65-1
o-Toluidine	95-53-4
2,4-Toluylenediamine (Toluene-2,4-Diamine)	95-80-7
2,4,5-Trimethylaniline	137-17-7

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