

Green Procurement Guidelines

(Ver. 8.4: Revised Oct 2016)



Hitachi Group

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1. Hitachi Group's Code of Conduct and involvement in environmental activities

Hitachi Group has been conducting its business activities centered on the Standards of Corporate Conduct since its foundation. Based on Hitachi's universal corporate spirit, and in order to meet society's expectation of "Corporate Social Responsibility (CSR)", the "Hitachi Group Code of Conduct" was established as a corporate regulation in August 2010 and was applied to all companies of Hitachi Group in April 2015. The Codes stipulate the need for procurement activities to be a part of honest and fair business operations, in addition to promoting environmental protection activities. Furthermore, the "Hitachi Group CSR Statement and Mission" was established in 2013, and we will continue aiming to build a sustainable business which promotes CSR and environmental activities along with communication with various stakeholders. We sincerely request our suppliers' cooperation in promoting the items included in the "Hitachi Action Guidelines for Environmental Conservation".

Fundamental Credo

The basic credo of Hitachi is to further elevate its founding concepts of harmony, sincerity, and pioneering spirit, to instill resolute pride in being a member of Hitachi, and thereby to contribute to society through the development of superior, original technology and products.

Hitachi is deeply aware that a business enterprise is itself a member of society, and thus strives to participate in the community and help achieve a truly prosperous society. To this end, Hitachi conducts its corporate activities in a fair and open manner, promotes harmony with the natural environment, and engages in activities that help further social progress.

(Adopted in June 1983, revised in September 1996)

CSR: Corporate Social Responsibility

Hitachi Group Codes of Conduct (Extract)

1.3 Procurement Activities

(1) We will strive to build good partnerships with suppliers, and to maintain and improve long-term relationships of mutual understanding and trust.

Omission ...

(3) We will select suppliers appropriately and fairly. In selecting suppliers, in addition to considering the quality, reliability, delivery dates and prices of materials as well as the management stability and technological development strengths of the suppliers, we will also give due consideration to their fulfillment of social responsibility including fair and highly transparent information disclosure, observance of laws and social norms, respect of human rights, elimination of unfair discrimination concerning employment and workplaces, elimination of child labor and forced labor, environmental protection activities, social contribution activities, creation of pleasant workplaces, and sharing of awareness about social responsibility with business partners.

2.1 Promoting Environmental Management

(1) We recognize the roles we should play and will carry out each of them to conduct monozukuri aimed at reducing the environmental burden of a product throughout its life cycle—from procurement of materials to production, distribution, use, and appropriate disposal—in order to realize a sustainable society in harmony with the environment.

(2) We will strive to conduct business management and operations observing environmental laws and regulations, as well as voluntary standards.

Formulated in August 2010

Hitachi Action Guidelines for Environmental Conservation

Purpose

In order to realize an environmentally harmonious and sustainable society through products and services, Hitachi is committed to meeting its social responsibilities by promoting globally-applicable “MONOZUKURI” (designing, manufacturing, or repairing of products), which is aimed at reducing the environmental load of products throughout their entire life cycles, ensuring global environmental protection.

Action Guidelines

1. Global environmental conservation is a critical challenge shared by all human beings. Hitachi is committed, therefore, to fulfilling its responsibilities by helping to achieve an environmentally harmonious and sustainable society as one of its management priorities.
2. Hitachi will strive to contribute to society by developing highly-reliable technologies and production processes, while identifying needs that take into consideration the prevention of global warming, conservation of resources, and preservation of ecosystems.
3. Members of the board in charge of environmental conservation are responsible for facilitating appropriate environmental conservation activities.
Departments responsible for environmental conservation shall endeavor to promote and ensure environmental conservation activities, including improving environment-related rules and regulations and setting goals for reducing environmental burden. These departments shall also confirm that their environmental conservation activities are conducted properly and ensure that these activities are maintained and improved.
4. Hitachi will promote globally-applicable ‘MONOZUKURI’ with the aim of understanding and reducing environmental burden at every stage, including product research and development, design, production, distribution, sales, usage, and final disposal.
5. Hitachi will investigate and review the environmental impact caused in the course of its ‘MONOZUKURI’ processes. Hitachi will also introduce excellent technologies and materials useful to safeguard the environment, in other words, to reduce environmental burdens through energy and resource saving, recycling, chemical substance management, consideration for the ecosystem, and other measures.
6. Hitachi’s environmental conservation efforts are not only to be focused on observing international environmental regulations and those of national and local governments, but also on conserving the environment by implementing voluntary environmental standards when necessary.
7. For globally-applicable ‘MONOZUKURI’ activities, impact on the local environment and community shall be considered. In addition, measures that meet local communities’ requests shall be implemented.
8. Hitachi will educate its employees to take action in compliance with environment-related laws, raise their global environmental awareness, and encourage their interest in environmental conservation while maintaining a wide perspective on social activities.
9. Hitachi will evaluate and prevent potential environmental problems. In the event that any environmental problem occurs, Hitachi will take appropriate measures to minimize the resulting environmental burden.
10. Hitachi will strive to disclose information on its environmental conservation activities to its relevant stakeholders. Hitachi will also actively communicate with these stakeholders so as to strengthen mutual understanding and cooperation.

Adopted March 1993

Revised July 2010

2. Hitachi Group's philosophy of green procurement

2.1 Policy of green procurement

As global warming, resource depletion, ecosystem destruction, and other environmental issues grow more serious, companies face increasing demands and expectations to reduce the environmental burden of their business activities.

Our goal is to achieve a more sustainable society by promoting global production that reduces the environmental burden of a product throughout its life cycle.



As part of this activity, green procurement aims for procurement of products and services that impose less environmental burden through the proper use of chemical substances, preservation of ecosystems, energy efficiency, longer durability, resource conservation, ease of recycling, disassembling, and disposing of parts, from suppliers who are positively addressing environmental activities.

2.2 Requests to our suppliers

The Hitachi Group asks for suppliers' understanding and support of Hitachi's Green Procurement, and for their cooperation in the following:

- Suppliers are requested to positively address environmental activities.
- Suppliers are requested to reduce the environmental burden of products delivered to the Hitachi Group.

The details are shown below.

(1) Items related to the environmental activities of suppliers

- Suppliers are requested to make, implement, and manage an action plan for Environmental Management System (EMS).
- In the case that the Hitachi Group conducts an audit for green procurement, suppliers are requested to fulfill the items specified in 4.2(1)(c) Items related to environmental protection activities (20 items).
- Suppliers are requested to construct a system that properly controls chemical substances included in their products.
- We believe that obtaining international environmental certifications, such as ISO14001 and EMAS, and Japanese environmental certifications, such as KES, Eco Stage, and Eco Action 21, is an effective measure for efficiently managing EMS. We therefore recommend that our suppliers obtain and maintain these environmental certifications.

(2) Items related to reducing the environmental burden reduction of delivered products

To reduce the environmental burden of delivered products, suppliers are requested to comply with 4.2(2)(a) Reducing the environmental burden of delivered products (12 items).

- EMS: Environmental Management System; promoting business while systematically considering environmental protection
- ISO14001: Composed of ISO registration bodies (International Organization for Standardization); an internationally recognized environmental certification system
- EMAS: Eco-Management Audit Scheme; environment management system of the EC (at that time) enforced in April 1995.
- KES: The most popular environmental certification system in Japan for small to medium enterprises, promoted by a specified non-profit organization, KES Environment Agency
- Eco-Stage: Environmental certification system for small to medium enterprises, promoted by a limited-liability intermediate corporation, Eco Stage institute
- Eco-Action 21: Environmental certification system for small to medium enterprises, promoted by the Institute for Global Environment Strategies - Center for Sustainability

(3) Items related to management of information on chemical substances present in supplied products

In order to use the presence of chemical substances in supplied products for work such as information disclosure in supply chains, follow the instructions in Chapter 3 to report management and information on the presence of chemical substances.

3. Regulating chemical substances in suppliers' products

3.1 Chemical substances regulated by the Hitachi Group

The Hitachi Group uses the "chemical substances regulated by the Hitachi Group guidelines" to classify chemical substances contained in procured products into two separate categories, prohibited substances and controlled substances.

Chemical substances regulated by the Hitachi Group guidelines

Classification	Regulated substances	Main legal regulations
Level 1 - Prohibited substances	These chemical substances are prohibited for inclusion in supplied products. Under regulations inside and outside Japan, these chemical substances are basically prohibited for use in products (including packaging), but might be used in products supplied to the Hitachi Group. For details, see <u>Separate table 1 or Attached list 1.</u>	See Separate table 1 or Attached list 1
Level 2 - Controlled substances	Under regulations inside and outside Japan, these are substances whose actual use must be known, and for which <u>appropriate</u> management is required, or controlled substances whose recycling and proper disposal must be considered. <u>This also includes substance groups whose inclusion in supplied products might be restricted according to utility.</u> For details, see <u>Separate table 2 or Attached list 2.</u>	See Separate table 2 or Attached list 2

Note that the regulation factors (such as substance groups, control levels, and threshold values) might vary depending on the operating division in the Hitachi Group due to circumstances such as industry trends. Pay attention to the division's requested items, and check the items accordingly.

In addition, we might request an investigation of the chemical substances used in the production, storage, and transport stages before delivery (even if the substances are not included in the delivered product) with the objective of conserving supplies. Suppliers' cooperation is also requested.

3.2 Warranty of non-inclusion of chemical substances in procured products

In the Basic Agreement entered into when trading materials, the Hitachi Group requests our suppliers to make certain considerations for the environment. Regarding chemical substances in their products, suppliers are requested to conduct quality control by warranting the non-inclusion of chemical substances in their products as necessary.

If non-inclusion of chemical substances in products is stated as a purchase specification requirement in the trade, documentations such as "Warranty of Non-Inclusion Concerning Banned Chemical Substances in Products" (Warranty of Non-Inclusion) must be submitted to the Hitachi Group as a delivery specification requirement.

"Non-inclusion" indicates that the following is rationally proved regardless of whether inclusion of the substance is intentional:

- Certain chemical substances are not included, or they are included but at an amount less than the designated threshold value.

3.3 Guidelines for regulating information about chemical substances contained in products (prohibition and control)

When collecting information about chemical substances contained in products, choose the best way to do so from an economical and engineering standpoint.

Use of level 1 prohibited substances groups is basically prohibited according to regulations inside and outside Japan, so legally, their non-inclusion in products must be guaranteed.

For level 2 controlled substance groups, appropriate management of inclusion information is required regardless of whether the substances are included in the products. Suppliers are requested to file reports in all cases; even statements such as "There is no information available that shows inclusion of the chemical substances" are to be reported when appropriate.

3.4 Regarding changes in materials and manufacturing methods, and information about contained chemical substances

If any changes in materials, manufacturing methods, production location, major manufacturing equipment, persons in charge of manufacturing, etc. are to be made for procured products, suppliers are required to submit a notice about the details of the change and the scope of effect each time. In addition, for information on inclusion of chemical substances, submission of a notice is mandatory when a new inclusion is discovered, or when previously-reported inclusions have changed.

4. Requests to our suppliers for their cooperation in green procurement investigations

With the support of our suppliers, the Hitachi Group will reinforce its endeavors to provide environmentally-conscious products. Our suppliers (in an upstream supply chain) are encouraged to cooperate with us in the investigation of their status.

4.1 Investigation overview

(1) Investigation categories

Investigations are to be conducted for each of the following categories:

- (i) The status of the supplier's environmental activities
- (ii) The status of reduction of the environmental burden of procured products
- (iii) Information about chemical substances included in procured products

(2) Method for replying to investigations

Suppliers are kindly requested to provide the Hitachi Group with information by means of its web-based Green Procurement System (A Gree'Net).

Advance user registration is required to access A Gree'Net. Contact the procurement department to which you deliver your products, or the Environment Data System Center in CSR Environment Strategy Division. For details about input operations, see the manual for the Green Procurement System (A Gree'Net) after log in to this system.

Green Procurement System (A Gree'Net) login screen:

<https://portal.ecsr-sys.ext.hitachi.co.jp/portal/static/html/index.htm>

Contact information for the Environment Data System in CSR and Environmental Strategy Division:
encsr.support.rp@hitachi.com

(3) Investigation frequency

Suppliers are requested to review the following items periodically (once a year) and enter updated data into the Green Procurement System (A Gree'Net):

- (i) the status of their environmental activities
- (ii) the status of reducing the environmental burden of products delivered to Hitachi

Investigations related to (iii) information on chemical substances included in the products, will be requested when necessary. If applicable, enter your answers into the Green Procurement System (A Gree'Net).

4.2 Content of investigation

(1) The status of environmental activities of suppliers

Investigations of the following items will be made for each supplier (or each business place of a supplier):

(a) Items related to environmental certifications

■ Acquisition of the ISO 14001 certification or other external certifications approved by Hitachi

- 1) Already obtained the ISO 14001 certification.
- 2) Already obtained another EMS certification.
- 3) Facilitating or have finalized a plan to acquire external certifications including ISO 14001.

(b) Items related to endeavors for Green Procurement

■ Status of planning Green Procurement

- 1) Implementing Green Procurement.
- 2) Planning to implement Green Procurement.

(c) Items related to environmental activities (20 items)

■ Corporate philosophy and policy

- 1) Have a corporate policy for environmental protection
- 2) Setting environmental guidelines to ensure continuous improvement in the prevention of global warming, the cyclical use of resources, and the preservation of the ecosystem.
- 3) The company's environmental policy is committed to observing legal restrictions.
- 4) Company environmental policy is known to all employees and available to any third party.

■ Plan and organization

- 5) Have a goal/target for environmental protection.
- 6) Assigning specific organizations/persons to carry out relevant responsibilities toward the goal/target.
- 7) Have an implementation plan to achieve the goal/target.

■ Environment assessment/system

Control and assess the following items in the manufacturing process to strive for improvement:

- 8) Reducing water pollution.
 - 9) Reducing air pollution.
 - 10) Reducing noise and vibration.
 - 11) Treating waste properly and reducing the amount of waste disposal.
 - 12) Reducing energy consumption (electricity, gas, fuel, etc.).
 - 13) Purchasing raw materials to reduce environmental burdens.
 - 14) Reducing the use and discharge of hazardous chemical substances.
 - 15) Have a product assessment program.
 - 16) Have a systematic plan for emergencies.
 - 17) Have any internal environment audit program.
- Provision of education, training, and information
- 18) Implementing an environmental education program.
 - 19) Implementing training for personnel engaged in work that might significantly affect the environment.
Have a list of such personnel.
 - 20) Providing information related to environmental protection.

(d) Manufacturing process information

■ Use or non-use of ozone-layer-depleting substances in the manufacturing process

- 1) Used in the product manufacturing process.
- 2) Not used in the product manufacturing process.
- 3) Under survey.

(2) The status of reducing the environmental burden of procured products

(a) Reducing the environmental burden of delivered products (12 items)

Regarding products the Hitachi Group procures from suppliers, suppliers are requested to comply with the items below. Suppliers are also requested to make the same considerations for raw materials and parts that they procure themselves.

■ Resource saving

- 1) Making an effort to reduce weight and size.
- 2) Using recycled parts or resources (recycled material content rate).
- 3) Taking into consideration product durability improvement.
- 4) Endeavoring to properly use water.

■ Energy saving

- 5) Taking into consideration energy saving during use/stand-by time (reduction rate of energy).

■ Recycling

- 6) Collecting and recycling products (recycling rate).
- 7) Using uniform and standardized materials.
- 8) Considering ease of disassembly and sorting.

■ Packaging materials

- 9) Reducing packaging materials and considering collection, reuse, and recycling.

■ Provision of information

- 10) Providing environmental information related to products.

■ Preservation of ecosystems

- 11) Endeavoring to reduce the burden on ecosystems
- 12) Endeavoring to properly use chemical substances.

(3) Information about chemical substances included in procured products

(a) Information about included chemical substances to be input into A Gree'Net.

In accordance with Attachments 1 and 2, enter the following information:

- (i) Basic product information
- (ii) Product composition information
- (iii) Information about inclusion or non-inclusion of regulated chemical substances
- (iv) Information about the submission or non-submission of a Warranty of Non-Inclusion

(b) Investigation format for chemical substances included in products

A Gree'Net provides flexible support for formats of controlling chemical substances included in products, that are widely adopted in the industrial world, primarily considering usability for suppliers. The Hitachi Group conceives that the format released by the Joint Article Management Promotion consortium (JAMP) is

currently the most reliable and rational tool for transmitting chemical substance information. In the future, we plan to convert all transmission of chemical substance information to the JAMP format.

The following formats can be used to input information to A Gree'Net:

- JAMP MSDSplus
- JAMP AIS
- JGPSSI survey response tool
- JAMA sheet

JAMP: Joint Article Management Promotion consortium: <http://www.jamp-info.com>

MSDSplus and AIS: Information transmission format for chemical substances provided by JAMP. MSDSplus complements MSDS. AIS covers chemical substances that are included in molds.

JGPSSI: Japan Green Procurement Survey Standardization Initiative

(already resolved by the shift to IEC62474)

List of the Hitachi Group's Voluntarily Controlled Chemical Substances (for Procured Products)

Separate table 1 (Level 1: Prohibited substances group list)

- Separate table 1 shows each level 1 (prohibited substances) substance or substance group, and its representative control value and relevant regulations.

For details about other utility, control values, and relevant regulations that fall under this restriction, see Attached list 1 (for the home page where the Attached list is published, see the upper part of page 15).

- For numbers 1 through 6, any items corresponding to those excluded from application according to the RoHS orders (EU) shown in Attached list 3-1 or Attached list 3-2 (for the home page where the Attached list is published, see the upper part of page 15) are excluded. However, you must report the reason for exclusion (e.g., an exclusion code).

Chemical substance		Legal limit	Main relevant regulations
1	Cadmium and its compounds ^{#1}	100ppm or less 100ppm or less (packaging materials) ^{#5}	RoHS directive (EU) Packaging directive (EU)
2	Hexavalent chromium compounds ^{#1}	1000ppm or less 100ppm or less (packaging materials) ^{#5}	RoHS directive (EU) Packaging directive (EU)
3	Lead and its compounds ^{#1}	1000ppm or less 100ppm or less (packaging materials) ^{#5}	RoHS directive (EU) Packaging directive (EU)
4	Mercury and its compounds ^{#1}	1000ppm or less 100ppm or less (packaging materials) ^{#5}	RoHS directive (EU) Packaging directive (EU)
5	Polybrominated biphenyls (PBBs)	1000ppm or less	RoHS directive (EU)
6	Polybrominated diphenyl ethers (PBDEs)	1000ppm or less	RoHS directive (EU)
7	Tri-substituted organostannic compounds ^{#2} Tributyltin compounds (TBT) Triphenyltin compounds (TPT) Bis (tributyltin) oxide (TBTO), etc.	Intentional use is prohibited, however, 1000ppm or less as tin	Japan Chemical Examination Law/Type 1 specified chemical substances REACH regulation (EU)
8	Polychlorinated biphenyls (PCBs)	Intentional use is prohibited	Japan Chemical Examination Law/Type 1 specified chemical substances POPs
9	Polychlorinated terphenyls ^{#2} (PCTs)	Intentional use is prohibited	REACH regulation (EU)
10	Polychlorinated naphthalenes (with 2 or more chlorines)	Intentional use is prohibited	Japan Chemical Examination Law/Type 1 specified chemical substances
11	Short-chain chlorinated paraffins ^{#2} ^{#3}	Intentional use is prohibited	POPs REACH regulation (EU)
12	Asbestos ^{#2}	Intentional use is prohibited, however, 1000ppm or less	REACH regulation (EU)

Chemical substance		Legal limit	Main relevant regulations
13	Ozone-layer-depleting substances (Class I) ^{#4} For substances that apply, see Attached list 4	Intentional use is prohibited	Montreal Protocol on Substances that Deplete the Ozone Layer
14	PFOS and its analogous compounds For substances that apply, see Attached list 5	Intentional use is prohibited	Japan Chemical Examination Law/Type 1 specified chemical substances POPs
15	2-(2H-1,2,3-Benzotriazole-2-YL)-4,6-di-tert-Butylphenol	Intentional use is prohibited	Japan Chemical Examination Law/Type 1 specified chemical substances
16	Hexachlorobenzene	Intentional use is prohibited	Japan Chemical Examination Law/Type 1 specified chemical substances
17	Dimethyl fulmarate (DMF) ^{#2}	0.1ppm or less	REACH regulation (EU)
18	Hexabromocyclododecane (HBCD or HBCDD) For substances that apply, see Attached list 9	Intentional use is prohibited	Japan Chemical Examination Law/Type 1 specified chemical substances POPs

Separate table 2 (Level 2: Controlled substances group list)

- Separate table 2 shows each substance or substance group that belongs to level 2 (controlled substances). For details about relevant laws, see attachment 2 (for the home page where the Attached list is published, see the upper part of page 15).
- For substances that count as REACH/restricted substances, or for details, see Attached list 6, and for details about REACH/permitted substances or SVHC substances, see Attached list 7 (for the home page where the Attached list is published, see the upper part of page 15).
- In order to use this for work such as information disclosure in supply chains, report information on the presence of the chemical substances below.

Chemical substance or substance group name	
1	Phthalic acid bis(2-ethylhexyl) (DEHP) (translation to Level 1 in Jan 2019)
2	Benzyl butyl phthalate (BBP) (translation to Level 1 in Jan 2019)
3	Dibutylphthalate (DBP) (translation to Level 1 in Jan 2019)
4	Diisobutyl phthalate (DIBP) (translation to Level 1 in Jan 2019)
5	Antimony and its compounds ^{#6}
6	Arsenic and its compounds ^{#6}
7	Beryllium and its compounds ^{#6}
8	Nickel and its compounds ^{#6}
9	Selenium and its compounds ^{#6}
10	Un-specific brominated flame retardants ^{#7}
11	Polyvinyl chlorides (PVCs) and its mixture, its copolymer
12	Phthalate esters other than No.1 - No.4 of this List
13	Ozone-layer-depleting substances (Class II: HCFC) ^{#8} (For applicable substances, see Attached list 4)
14	Radioactive substances
15	Di-substituted organostannic compounds (DBT, DOT, etc.)
16	Cobalt and its compounds ^{#6}
17	Azodyes and azocolourants which form specific amines (For applicable substances, see Attached list 8)
18	Formaldehyde
19	Benzene
20	Fluorine-based greenhouse gases
21	Polycyclic-aromatic hydrocarbons (PAHs) corresponding to REACH/restriction substance (For applicable substances, see Attached list 6)
22	Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA (For applicable substances, see Attached list 10)

Chemical substance or substance group name	
23	Benzenamine, N-phenyl-,reaction products with styreneand 2,4,4-trimethylpentene (BNST)
24	REACH/restriction substances (For applicable substances, or for details, see Attached list 6)
25	REACH/authorization substances (For applicable substances, see Attached list 7)
26	RECAH/SVHC (For applicable substances, see Attached list 7)
27	JAMP declarable substances ^{#9}

Notes on Separate tables 1 and 2:

- #1: For metals, alloys are included.
- #2: REACH/restriction substances whose utility and treatment is judged to satisfy all regulations.
- #3: Applies to short-chain chlorinated paraffins of carbon chain length 10 through 13.
- #4: Class I substances according to the Montreal Protocol on Substances that Deplete the Ozone Layer (ozone-depleting chemicals excluding HCFC).
- #5: For packaging materials, the total of four substances must be 100ppm or less.
- #6: For metals, alloys are included.
- #7: Those other than PBBs and PBDEs listed in Separate table 1 (Prohibited).
- #8: Class II substances according to the Montreal Protocol on Substances that Deplete the Ozone Layer.
- #9: Declarable substances regulated by the Joint Article Management Promotion consortium (JAMP).

Substances to which the following laws and industry standards apply are included:

1. Japan Chemical Examination Law/Type 1 specified chemical substances
2. Japan Industrial Safety and Health Law (substances whose manufacture is prohibited)
3. Poisonous and Deleterious Substances Control Law (specific toxic substances)
4. RoHS directive
5. ELV directive
6. CLP (Annex VI Table3.1/CMR-Cat 1a and 1b as well as Table3.2/CMR-Cat 1 and 2)
7. REACH Annex XVII (restriction substances)
8. REACH authorization substance candidates (SVHC)
9. POPs regulation Annex I
10. ESIS PBT (parts that apply to the PBT evaluation criteria)
11. GADSL
12. IEC62474

For details, see the following document and list:

JAMP declarable substance handbook and *JAMP declarable substance reference list* (Latest version)

Attachment list

- Attached list 1: List of details on utility/control values/reference laws relating to each level 1 (Prohibited) substance group
- Attached list 2: List of details on utility/control values/reference laws relating to each level 2 (Managed) substance group
- Attached list 3-1: RoHS directive/list of exemptions (Annex 3)
- Attached list 3-2: RoHS directive/list of exemptions (Annex 4)
- Attached list 4: Ozone-layer-depleting substances list
- Attached list 5: PFOS and its analogous compounds list
- Attached list 6: REACH/restriction substance list

Attached list 7: REACH/authorization substance/SVHC list

Attached list 8: Specific amine list

Attached list 9: Hexabromocyclododecane list

Attached list 10: List of Perfluorooctanoic acid (PFOA) and individual salts and esters of PFOA

(Home page for Attached lists: http://www.hitachi.co.jp/environment/library/pdf/green_annex_en.pdf)

Attachment 1 (Survey of chemical substances)

■ Survey of chemical substances included in raw materials, parts, and half-finished and finished products

To determine each denominator and numerator, follow the definitions for calculating the content percentage of the mass of included chemical substances shown below.

Even if the content percentage is no more than the threshold value, follow the policy for registering surveyed values.

	Unit of survey	Unit and definition of surveyed values	Policy of registering the surveyed values	
			Substance intentionally added	Substance potentially added unintentionally
Level 1 Prohibited substances group	RoHS: For each homogeneous materials Not RoHS: For each supplied product or for each arbitrary class into which supplied products are divided	Unit: a) The mass of the denominator and the mass of the numerator or b) The mass and concentration of the denominator for each region that includes chemical substances Definition: The maximum value (theoretical or actual measured value)	Register regardless of the value.	Also register if the substance is potentially added.
Level 2 Controlled substances group		Unit: The mass of the substances concerned included in each delivered product, or the mass of the substances concerned included in each class obtained by dividing delivered products into arbitrary classes Definition: The mean value (theoretical or actual measured value) or the maximum value (theoretical or actual measured value)	Register regardless of the value.	Also register if presence is confirmed and the value is obtained.

- Note that individual controls for substances groups not listed above might also be requested depending on the product group to be surveyed.
- Some prohibited substances were used for various applications in the past as additive agents to achieve product performance characteristics. These might even be included in current products.

Various cases of erroneous use, mixing, and contamination of prohibited substances have been reported, including those usually contained in raw materials in nature, remaining in products after generation as by-products or used as subsidiary materials in the manufacturing process, being mixed into products due to shared production lines or the use of alternative materials available in inventory.

Suppliers are requested to properly control prohibited materials in order to prevent their mixture into products in excess of the threshold value by understanding their characteristics and tracking their history, including those exempt from laws and regulations.

■ Definition of the denominator and the numerator for calculating the content percentage of the mass of included chemical substances

(1) Definition of the denominator

RoHS regulations : Homogeneous materials

Regulations other than RoHS : For each procured product or for each arbitrary class into which procured products are divided

[Definition of homogeneous material]

Homogeneous material refers to material that cannot be mechanically separated into other materials.

The following are homogeneous substances or homogeneous materials:

Composites	Judgment criteria
Chemical compounds, polymer alloys, metallic alloys, etc.	Homogeneous materials
Materials that have undergone painting, printing, plating (chromate treatment) or other treatments	Individual monolayers are considered homogeneous material. (In the case of zinc plating chromate treatment, the zinc plating layer and the chromate treatment layer are considered separate homogeneous materials. However, if it is difficult to obtain the values for individual monolayers by separating multilayers, the minimum separable unit is considered a homogeneous material unit (JIS C 0950).)

(2) Definition of a numerator

“Chemical substances” refers to chemical elements or compounds.

Chemical substances	Definition of a numerator
Metals and metallic compounds etc.	Mass of metallic elements
Substances other than metals and metallic compounds	Mass of the chemical substance

The molecular mass relevant to the CAS number is to be filled in (actually larger than the mass of metallic elements in the molecule) for the potential REACH SVHC.

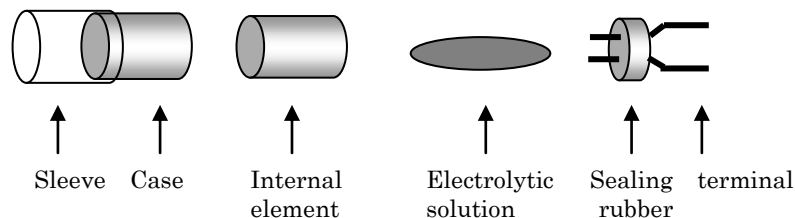
■ Example registration of product composition information (Electrical part)

The Hitachi Group defines products, regions, and compositions (chemical substances) as shown in the table and class chart below.

- Exempted substances not included in prohibited or controlled substances can all be categorized as “other chemical substances”.
- “Chemical substances” refers to chemical elements or compounds.

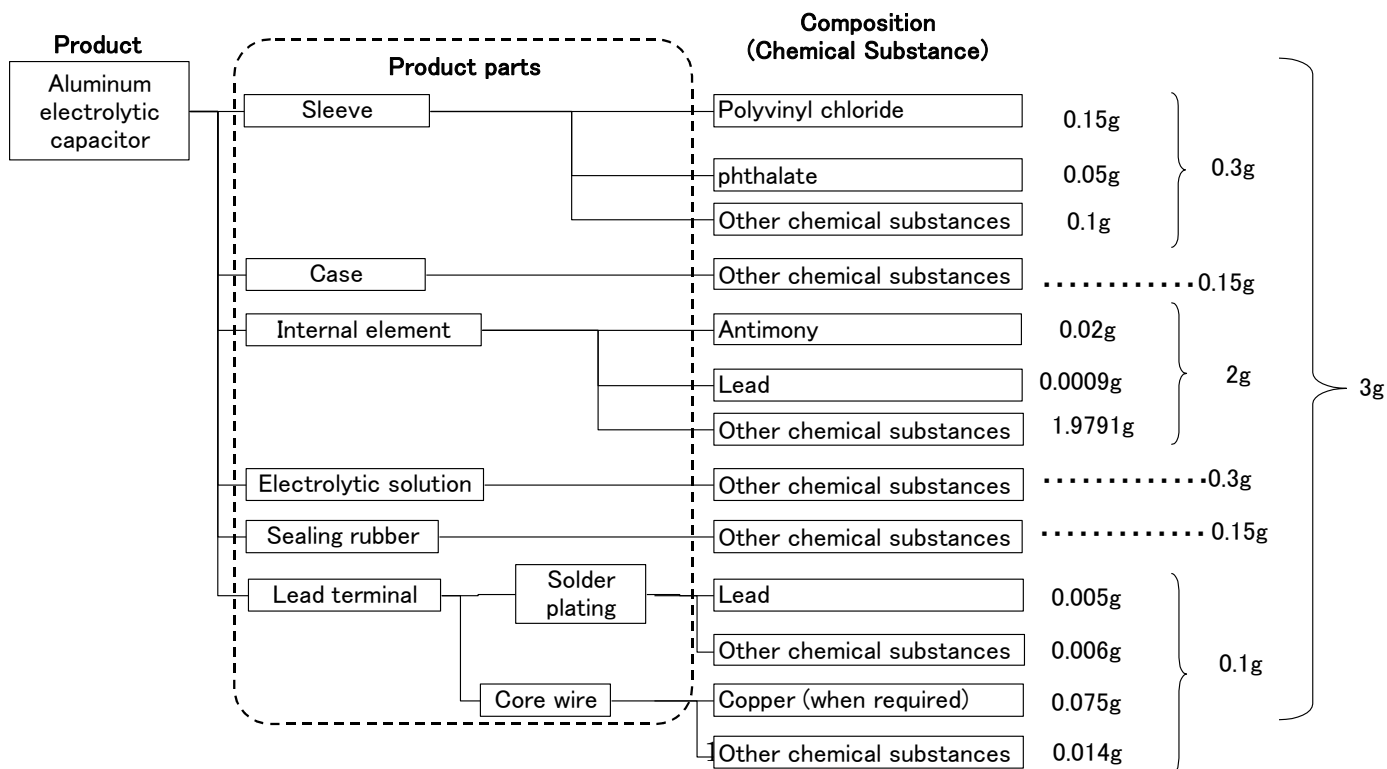
- "Product parts" refers to the minimum unit that can be mechanically separated from other materials and is composed of homogeneous substances. (For details, see the A Gree'Net user's manual.)

Aluminum electrolytic capacitor (weight: 3g)



Product: Aluminum electrolytic capacitor

Product parts		Composition (Chemical substance)				
Product parts	Mass /g	Chemical substance name	Use	CASnumber	Content/g	
Sleeve (Outer tube)	0.3	Polyvinyl chloride		9002-86-2	0.15	
		Phthalate	Plasticizer	117-81-7	0.05	
		Other chemical substances		—	0.1	
Case	0.15	Other chemical substances		—	0.15	
Internal element	2	Antimony		7440-36-0	0.02	
		Lead		7439-92-1	0.0009	
		Other chemical substances		—	1.9791	
Electrolytic solution	0.3	Other chemical substances		—	0.3	
Sealing rubber	0.15	Other chemical substances		—	0.15	
Lead terminal	Solder plating	0.011	Lead	Solder	7439-92-1	0.005
			Other chemical substances		—	0.006
Core wire	0.089	Copper (when required)		7440-50-8	0.075	
		Other chemical substances		—	0.014	



Attachment 2 (Measurement method)

■ Measurement method for the mass of included chemical substances

(1) Measurement method for lead, hexavalent chromium, cadmium, mercury, PBBs, and PBDEs

Use the measurement method shown in the Hitachi Group's "Guidelines for analyzing cadmium, lead, mercury, hexavalent chromium, and brominated flame retardants (PBB, PBDE) in response to the RoHS Directive"

http://www.hitachi.co.jp/environment/library/pdf/RoHS_en.pdf

or the equivalent with the same or higher accuracy.

(2) Measurement method for other chemical substances

For the measurement method for other chemical substances, follow the instructions of the Quality Assurance Division of the business office where your products are delivered.

No.	Month	Revision History
Ver. 6.2	March 2011	2.1 Insertion: "preservation of ecosystems".
		2.1 Insertion: The "Hitachi Environment Vision" symbol.
Ver. 6.3	May 2012	2.2(1)() "environmental protection activities" (19 items -> 20 items).
		2.2(2) "Environmental load reduction of products" (10 items -> 11 items).
		4.2(1)(c) Items related to environmental activities(19 items -> 20 items).
		4.2(1)(c) Insertion : 13) Raw materials purchasing for * burdens.
		4.2(1)(c) 14) Reduce the use and * substances ((13) -> (14)).
		4.2(2)(a) "Reducing the environmental burden of products" (10 items -> 11 items).
		4.2(2)(a) ■Preservation of ecosystems <- ■Chemical substances.
		4.2(2)(a) Insertion : 10) Suppliers are endeavoring * ecosystems.
Ver. 7.0	April 2013	Revision of controlled substance groups in Separate table 1 and Separate table 2.
		Correction of related body text according to the above changes.
Ver7.1	June 2015	Revision of a part of link-address and division name
Ver. 8.0	May 2015	Revision of controlled substance groups in Separate table 1 and Separate table 2
Ver8.1	Feb 2016	Add the login address of Green Procurement System (A Gree'Net) in 4.1
Ver8.2	Apr 2016	Revision of Analysis guideline for RoHS Directive in attachment2. Ver2.0→ Ver3.0
Ver8.3	Sep 2016	Change of the number of chlorine of Polychlorinated naphthalenes (with 3 or more chlorines → with 2 or more chlorines)
Ver8.4	Oct 2016	Revision of Hitachi's Environmental Vision. Add the 4.2(2)(a) Reducing the environmental burden of delivered products 4). (11items->12items)



Value Chain Integration Division

Marunouchi Center Bldg., 6-1, Marunouchi 1-chome,

Chiyoda-ku, Tokyo, 100-8220 Japan

TEL. +81-3-3258-1111

<http://www.hitachi.co.jp/procurement/>

CSR Environment Strategy Division

Marunouchi Center Bldg., 6-1, Marunouchi 1-chome,

Chiyoda-ku, Tokyo, 100-8220 Japan

TEL. +81-3-3258-1111

<http://www.hitachi.co.jp/environment/>