

Eco Mark Product Category No.159

“Servers Version1.3” Certification Criteria

- Applicable scope -

Server type electronic computers defined by “Computers” of the Act on Promotion of Procurement of Eco-Friendly Goods and Services.

Notwithstanding the foregoing, application may be made in the case where all the criteria items to which this Product Category is applicable are satisfied.

Established: September 16, 2016
Revised: April 1, 2022
Expiration date September 30, 2028

Japan Environment Association
Eco Mark Office

NOTE: This document is a translation of the criteria written in Japanese. In the event of dispute, the original document should be taken as authoritative.

Eco Mark Product Category No.159 “Servers Version1.3” Certification Criteria

Japan Environment Association
Eco Mark Office

1. Purpose of Establishing Criteria

Omitted.

2. Applicable Scope

This Product Category shall cover the server type electronic computers defined by “Computers” of the Act on Promotion of Procurement of Eco-Friendly Goods and Services.

Notwithstanding the foregoing, application may be made in the case where all the criteria items to which this Product Category is applicable are satisfied.

3. Terminology

Resource reuse rate	The percentage in terms of weight of the parts or materials of each unit of product which become reusable or recyclable as resources when the use of the product terminates. More specifically, this represents the ratio of parts or materials, etc. which can be reused or recycled as resources in relation to the total weight of the products disposed of (i.e., collected products excluding reused products).
Parts or materials, etc. which become reusable or recyclable as resources	These refer to those reused as used recycled parts (or units), as well as such materials to be recycled as materials for producing iron, copper, aluminum, precious metal, glassware, plastics, etc. but do not include plastics recycled through conversion to oil, subjected to blast furnace reduction, gasification, or conversion to chemical materials by coke oven, or the recovery of heat.
Recovery rate	Among mass of equipment which have been used, disposed of, and collected, a mass ratio of parts that are reused, material recycled, energy recovered, converted to oil, gasified, or subject to blast furnace reduction or conversion to chemical materials by coke oven.
Plastic	Material composed of single or multiple polymers, plus additives, fillers, etc. which are added to the polymer(s) to give specific characteristics.
Polymer	High molecular material which is the main constituent of plastic.
Casing part	Outer cover part that mainly forms the external appearance of the product. The casing part protects the device from environmental effects and ensures user safety. Displays, optical disc devices, connectors, LEDs, power switches and other objects

	exposed on the surface of a casing are not considered as a casing part.
Chassis	A frame that is provided inside a casing and that is needed to support the casing parts and main parts of the product. When a casing also serves as a chassis, as in a notebook PC, its external appearance function takes precedence and it is treated as a casing part.
Prescribed constituent	A material component added for the intended purpose of giving certain characteristics to a product. Impurities of 0.1wt% or less that are technically unavoidable in the manufacturing process are not included.

4. Certification Criteria and Certification Procedure

To show conformance to the individual criteria item, the respective Attached Certificates shall be submitted. .

Criteria items do not apply to optional parts.

The product should conform to all the corresponding **[Mandatory]** items to which the applying product is applicable and, simultaneously, the percentage of corresponding points in all the **[Optional]** items should satisfy those indicated in Table 1.

Table 1. Required percentage of corresponding points in **[Optional]** items

Date when the application made (New, addition of a model)	[Mandatory]	[Optional] percentage of corresponding points
Product applying before September 30th, 2019	Satisfies all items	35% or more
Product applying after October 1st, 2019	Satisfies all items	45% or more

The percentage of the corresponding points in the optional items should be calculated using the formula indicated below.

$$\text{Percentage of the number of corresponding points (\%)} = \frac{\text{[Number of corresponding points]}}{\text{[Total number of [Optional]]}} \times 100$$

The items which do not correspond to the applying product should be excluded from the numerator and the denominator in the above formula. In calculating the percentage of the number of corresponding points, numbers after the decimal point should be disregarded.

Example: While the standard value concerning heavy metals included in built-in batteries is set in section 4-1-3 (14), in the case where no built-in batteries are used, the calculation shall include it neither in the numerator (number of corresponding points) nor in the denominator

(number of all the optional items).

4-1. Environmental Criteria and Certification Procedure

4-1-1 Resource Saving and Resource Recycling

(1) **[Mandatory]**, **[Optional]**

Equipment shall conform to **Appendix 1** “Product Design Checklist”.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate. The applicant shall enter requirements in **Form 1** “Product Design Checklist” and submit it.

(2) **[Mandatory]**

Systems for collecting used products (applicable to the applying product) and for product reuse or recovery processing shall be available and these systems are effective.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate. In addition, documents describing the system of collection and recycling of used products (containing the method of collection, amount of products reused (t), amount of recovery process (t) and amount of products actually collected (t) during approximately three years in the past) shall be submitted (Form 2). While it is desirable, with regard to the amount of the product actually recovered, to grasp the total weight for each applying series, if reporting based on the values of actual results including other kinds of devices, it will be accepted to include in the report the percentage of the products of corresponding series (estimates) included in the overall weight

(3) **[Optional]**

The resource reuse rate for the amount of recovery process (t) in the collected products shall be 50% or more.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate. In addition, documents describing amount processed, method of processing, use, etc. of respective materials or parts should be submitted (Form 2).

While it is desirable, with regard to the amount (t) of recovery process and resource reuse rate, to grasp the total weight for each applying series, if reporting based on the values of actual results including other kinds of devices, it will be

accepted to include in the report the percentage of the products of corresponding series (estimates) included in the overall weight. In such cases, however, it should be designed so that the applying product shall not fail to achieve the respective standards.

(4) **[Mandatory]**

The ratio of the total weight of product reuse and recovery process (t) (recovery rate) among the total weight of collected products (t) shall be 95% or more. Parts of collected product which cannot be recovered shall be appropriately processed after the weight reduction.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate. In addition, documents describing the recovery rate as well as stating that the system is well established for processing or disposal of the portion which cannot be recycled (processing capacity, processing details, etc.) should be submitted (Form 2).

While it is desirable, with regard to the recovery rate, to grasp the total weight for each applying series, if reporting based on the values of actual results including other kinds of devices, it will be accepted to include in the report the percentage of the products of corresponding series (estimates) included in the overall weight. In such cases, however, it should be designed so that the applying product shall not fail to achieve the respective standards.

(5) **[Mandatory]**

Supply of the spare parts (sparing parts to maintain the function and performance of the product) shall be ensured for 5 years after discontinued production of the mass produced product.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate, and the applicant shall submit copies of product documentation indicating the matters related to this item.

(6) **[Mandatory]**

Maintenance and repair subcontract systems shall be available, and repairs shall be carried out as requested by the users (repair system). The following items shall be satisfied to improve the system:

- a. Information that repair services are available shall be provided;
- b. Information that the scope of repair (details of services), repair time, costs, how services are provided to users, etc. shall be provided.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate, and the applicant shall submit copies of product documentation indicating the matters related to this item.

(7) **[Mandatory]**, **[Optional]**

Packaging or packing of equipment shall be as simple as possible and give consideration to ease of reuse and environmental burden when packaging or packing materials are disposed of. Specifically, the product shall comply with “Packaging Material Check List” of Appendix 2.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, “Packaging Material Check List” of Form3 shall be submitted.

(8) **[Mandatory]**, **[Optional]**

No.	Requirement	Category
A	<p>The paper-based manual to be provided together with the product shall satisfy (1) and (2) mentioned below.</p> <p>(1)It is bounded in a manner that will not cause any trouble in the recycling of waste paper. If the hot-melt adhesive is used, it should be any of the improved, non-dispersive EVA hot melt adhesive, the polyurethane hot-melt adhesive or water-soluble hot-melt adhesive.</p> <p>(2)The paper to be used should contain 70% or more waste-paper pulp, or should be the paper authorized under the forest certification system. In the case where the paper-based manual is manufactured overseas, it will be acceptable to use the paper containing 30% or more waste-paper pulp.</p>	[Optional]
B	Among the kinds of paper used in the paper-based manual to be provided together with the product, one or more kind of paper should be Eco-mark certified.	[Optional]
C	The manual to be provided together with the product should be made in the electronic form (electronic manual or Web-	[Mandatory]

	based manual) so that the paper resources used in the manual provided will be reduced.	
D	Efforts are made to reduce appurtenances such as the server setup tools (except paper-based manuals).	[Optional]
E	There should be the provision of services which allow purchasers to select or reduce the appurtenances (such as manuals) according to the scale of the purchase.	[Optional]

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate. For E, copies of a corresponding part in website, etc. to this item shall be submitted.

4-1-2 Prevention of Global Warming

(9) [Mandatory], [Optional]

The energy consumption efficiency of the product shall be equal to or more than the figure shown in Table 2.

Table 2. Standard Energy Consumption Efficiency for Server-type Computers

Category			Standard energy consumption efficiency *	Energy consumption efficiency	
Type of CPU	Number of CPU sockets	Category		[Mandatory]	[Optional]
x86	1	1	8.9	8.9	10.7
	2	2	11.9	11.9	14.3
	4	3	8.9	8.9	10.7
SPARC	1	4	6.3	6.3	7.6
	2	5	4.2	4.2	5.0
	4	6	3.5	3.5	4.2
Power	1	7	4.6	4.6	5.5
	2	8	4.9	4.9	5.9
	4	9	4.2	4.2	5.0

* the targeted standard value for fiscal 2021 for the device specified as “electronic computer” in the Act on the Rational Use of Energy (the “Energy Saving Act”)

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate and Form 4 shall be submitted.

4-1-3 Restriction and Control of Hazardous Substances

(10) [Mandatory], [Optional]

The content rate of lead, mercury, cadmium, these compounds, hexavalent chromium, Polybrominated biphenyl, Polybrominated diphenylether, etc. shall conform to Annex II (Table 5) of Commission Delegated Directive (EU) 2015/863 amending Annex II to Directive 2011/65/EU. However, substances specified in Annex III are exceptions.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, it is recommended that checking is performed based on JIS Z 7201 “Management of chemical substances in products - Principles and guidelines”.

Table 5. Content rate

No.	Requirement		Category
	Material	Content rate[wt%]	
A	Lead and its compounds	≤ 0.1	[Mandatory] If exceptions 6.a)-c) have been dealt, points are added to [Optional]
	Mercury and its compounds	≤ 0.1	
	Cadmium and its compounds	≤ 0.01	
	Hexavalent chromium compounds	≤ 0.1	
	Polybrominated biphenyl (PBB)	≤ 0.1	
	Polybrominated diphenylether (PBDE)	≤ 0.1	
B	Bis (2-ethylhexyl) phthalate (DEHP)	≤ 0.1	[Mandatory]
	Butyl benzyl phthalate (BBP)	≤ 0.1	
	Dibutyl phthalate (DBP)	≤ 0.1	
	Diisobutyl phthalate (DIBP)	≤ 0.1	

* The content rate refers to the content proportion in a homogeneous substance (minimum unit that can be separated by rule with totally uniform composition).

(11) **[Mandatory]**, **[Optional]**

No.	Requirement	Category
A	Polymer containing halogen shall not be used for plastic casing parts weighing over 25g. However, fluoroplastics, for example, PTFE, etc. are allowed to be used.	[Mandatory]
B	The product shall have no flame retardant of short-chain chlorinated paraffin (SCCPs) (the number of chained C is 10 to 13 and contained chloride concentration is 50% or over) and Hexabromocyclododecane (HBCD) added as prescriptive constituents in the plastic casing parts weighing over 25g and the printed circuit board.	[Mandatory]
C	The product shall have no flame retardant of organohalogen compounds as prescriptive constituents in the plastic casing parts weighing over 25g. However, 0.5% or less fluoroorganic additives (for example, anti-dripping agents, etc.) are allowed to be used to improve the physical properties of plastics.	[Optional]

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, the list of plastic materials used (Form 5) shall be submitted. The manufacturer of the raw material and whether polymers containing halogens, and organohalogen compounds and the CAS number of the flame retardants used or the code number according to the ISO1043-4 (JIS6899-4) shall be indicated. In addition, it is recommended that checking is performed based on JIS Z 7201 “Management of chemical substances in products - Principles and guidelines”

(12) [Optional]

Each substance listed in the following a. to e. shall not be added to plastic casing parts weighing over 25g as prescribed constituents.

- a. Carcinogenic substances based on Category 1A or 1B of Table 3.1 in Annex VI of EC Regulation 1272/2008/EC
- b. Mutagen based on Category 1A or 1B of Table 3.1 in Annex VI of EC Regulation 1272/2008/EC
- c. Reproductive toxic substances based on Category 1A or 1B of Table 3.1 in Annex VI of EC Regulation 1272/2008/EC
- d. Persistent, bio-accumulative and toxic substances (PBTs) or very persistent or very bio-accumulative substances (vPvBs) based on the criteria in Annex XIII of the REACH Regulation
- e. Substances of very high concern in the list (so-called “list of SVHC candidates”) in REACH Regulation, Article 59, para. 1.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, it is recommended that checking is performed based on JIS Z 7201 “Management of chemical substances in products - Principles and guidelines”.

(13) [Optional]

The emission rate of volatile organic compounds (VOC) of the typical model is measured and, simultaneously, efforts are made to design the products enabling reduction of VOC.

[Certification Procedure]

Compliance with this item shall be indicated in the attached certificate. In addition, the material explaining the grounds (such as the results of testing the typical model) shall be submitted

(14) **[Mandatory]**, **[Optional]**

No.	Requirement	Category						
A	<p>A battery built in the product shall comply with the EU Directive 2013/56/EU (Table 7).</p> <p>Table 7. criteria for heavy metals in batteries</p> <table border="1"> <thead> <tr> <th></th> <th>mercury[wt%]</th> <th>cadmium[wt%]</th> </tr> </thead> <tbody> <tr> <td>Content rate</td> <td>≤ 0.0005</td> <td>≤ 0.002</td> </tr> </tbody> </table>		mercury[wt%]	cadmium[wt%]	Content rate	≤ 0.0005	≤ 0.002	[Mandatory]
	mercury[wt%]	cadmium[wt%]						
Content rate	≤ 0.0005	≤ 0.002						
B	<p>Lead in a battery built in the product shall be less than the criteria in EU Directive 2006/66/EU (Table 8).</p> <p>Table 8. criteria for heavy metals in batteries</p> <table border="1"> <thead> <tr> <th></th> <th>lead [wt%]</th> </tr> </thead> <tbody> <tr> <td>Content rate</td> <td>≤ 0.004</td> </tr> </tbody> </table>		lead [wt%]	Content rate	≤ 0.004	[Optional]		
	lead [wt%]							
Content rate	≤ 0.004							

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, it is recommended that checking is performed based on JIS Z 7201 “Management of chemical substances in products - Principles and guidelines”.

(15) **[Mandatory]**

In manufacturing the applying product, related environmental laws and regulations and pollution control agreement (hereinafter referred to as the “Environmental Laws, etc.”) must be followed with respect to air pollution, water contamination, noise, offensive odor, and emission of hazardous substances in the area where the plant performing the final manufacturing process is located. In addition, the state of compliance with the Environmental Laws, etc. for the last five years from the date of application (whether there is any violation) must be reported. If there is any violation, it is necessary that proper remedies and preventive measures have been already taken, and the related Environmental Laws, etc. must thereafter be followed appropriately.

For soil contamination, this criteria item does not apply to the polluting activities before the said pollution control regulations were enforced.

[Certification Procedure]

With respect to the compliance with the Environmental Laws, etc. in the area where the plant performing the final manufacturing process is located, a certificate issued by the representative of the manufacturer of the applying product or the manager of the relevant plant (entry or attachment of the list of

names of the Environmental Laws, etc.) must be submitted. **Form 6**

In addition, it is necessary to report whether there is any violation during the last five years, including a violation subject to administrative punishment or administrative guidance, and if there is, the following documents in a and b must be submitted:

- a. With respect to the fact of violation, guidance documents from administrative agencies (including order of correction and warning) and copies of written answers (including those reporting causes and results of correction) to such documents (making a series of progress clear);
- b. Following materials (copies of recording documents, and so on) concerning the management system for compliance with the Environmental Laws, etc. in 1)-5):
 - 1) List of the Environmental Laws, etc. related to the area where the plant is located;
 - 2) Implementation system (organizational chart with entry of roles, etc.);
 - 3) Document stipulating retention of recording documents;
 - 4) Recurrence prevention measures (future preventive measures);
 - 5) State of implementation based on recurrence prevention measures (result of checking of the state of compliance, including the result of onsite inspection).

(16) **[Mandatory]**, **[Optional]**

No.	Requirement	Category
A	The plant that conducts final assembly of the product shall not emit any of the “HCFCs” listed in the attached table 3.	[Mandatory]
B	The plant that manufactures parts used in the product shall not emit any of the “HCFCs” listed in the attached table 3, or try to reduce the amount used. . This does not include plant equipment that is not directly related to the product manufacturing process, such as air-conditioners and refrigerators.	[Mandatory]
C	It shall be confirmed that the plant which manufactures parts used in the product does not emit any of the “HCFCs” listed in the attached table 3, This does not include plant equipment that is not directly related to the product manufacturing process, such as air-conditioners and refrigerators.	[Optional]

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

4-1-4 Provision of Information to Users

(17) Information on the matters below shall be provided to users through the instruction manual (electronical media), leaflet and the website.

- 1) Information on collection/recycling **[Mandatory]**
 - a. Information on collection of used equipment (method of collection, contact address for collection, etc.)
 - b. Information on collection/recycling of used secondary batteries.
- 2) Content information of specific chemical substances (lead, mercury, cadmium, chromium (VI) compound, PBB, PBDE) can be easily obtained on websites and labels. **[Optional]**
- 3) Information on energy consumption **[Mandatory]**
 - a. Information on power consumption (maximum power consumption, energy efficiency by energy saving law)
 - b. Method of using or setting, which results in energy saving

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of a corresponding part in an instruction manual, leaflet, web site, etc. that indicates the matters related to this item shall be submitted.

4-1-5 other criteria items on reducing environmental burdens

(18) **[Mandatory]**, **[Optional]**

No.	Requirement	Category
A	<p>[Lowering the environmental burden over the entire product lifecycle]</p> <p>The applicant shall implement the lifecycle assessment (LCA) of the applying product (typical products including the applying products) and make efforts to reduce the environmental burden over the entire lifecycle.</p>	[Mandatory]
B	<p>[Lowering the environmental burden over the entire product lifecycle]</p> <p>The applicant shall publicly disclose the results of the LCA of the applying product in the Website, etc. Or, otherwise, it has been verified by the Type III environmental labelling (ECO LEAF) or the CFP Communication.</p>	[Optional]

C	<p>[Preservation of biodiversity]</p> <p>The applicant (including cases where all members of a group are engaged) shall formulate “Action Agenda for Preservation of Biodiversity,” etc. and shall be proceeding with the engagement.</p>	[Optional]
D	<p>[CSR procurement]</p> <p>The country of origin and supplier of such mineral resources as tin, gold, tantalum, and tungsten used in the product shall have been confirmed. (Conflict minerals)</p>	[Optional]

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate.

Regarding above A, the results of the LCA of the typical model (if the LCA is underway, results of the LCA of past products are acceptable) shall be submitted.

Regarding above B, the corresponding portion of the public announcement or the material proving that the product has been verified shall be submitted (statement of the URL is also acceptable).

Regarding above C, the URL, etc. of the Action Agenda, etc. shall be stated in the Attachment.

Regarding above D, explanatory materials, etc. shall be submitted.

4-2 Quality criteria and certification procedures

None

5. Product Classification, Indication and Others

(1) Product classification (application unit) shall be by model or by series of model.

Also, product classification in terms of OS, CPU, memory capacity and difference in housing color, etc. shall not be applied.

In case of product classification by series of model, several models may be placed under the same application, however, each model in the series shall conform to the relevant criteria

(2) Regarding products which correspond to designated procurement items under the "Act on Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities (Green Purchasing Law)", conformity status for evaluation criteria will be announced on the website of the Eco Mark Office.

- (3) In principle, the Eco Mark shown as below shall be indicated on the product, etc. The licensees of Eco Mark Utilization Contract who own the Eco Mark products shall also be allowed to use the indication and the certification number as before.



(Note for the indication)

- *For indicating the logo, Eco Mark certification number (eight-digit number) or the name of the licensee using the logo shall be appeared.
- * Such expression as “Eco Mark product” can be used following the 2.(2) of the Guide to Eco Mark Usage.
“Eco Mark product”, “#Eco Mark”, “www.ecomark.jp”, “Eco Mark Certificate”
- * If a licensee makes an environmental claim of the Eco Mark certified products associating with the Eco Mark logo, please comply with the “Environmental Labeling Guidelines” of the Ministry of the Environment of Japan.
(<https://www.env.go.jp/policy/hozen/green/ecolabel/guideline/>)
- * The Guide to Eco Mark Usage shall be followed for any cases not listed above.
(<https://www.ecomark.jp/office/guideline/guide/>)

September 16, 2016	Established (Version1.0)
April 1, 2019	Revised (Eco Mark Indication)
March 1, 2020	Revised (Version1.1)
March 1, 2021	Revised (Version1.2)
March 1, 2022	Extension of Expiation date
April 1, 2022	Revised (Version1.3)
September 30, 2028	Expiration date

The certification criteria of this product category will be revised as necessary.

Appendix 1 Product Design Check List

■ Regarding Product Design Check List

It is important to work out the design for the long lives of the products, conservation of natural resources, reuse of parts or raw material recycling, based on the determination criteria of the Act on Promotion of Effective Utilization of Resources. This checklist indicates important indicators for realizing furthered “3Rs” (reduce, reuse and recycle).

■ Terminology

Casing part	Outer cover part that mainly forms the external appearance of the product. The casing part protects the device from environmental effects and ensures user safety. Displays, optical disc devices, connectors, LEDs, power switches and other objects exposed on the surface of a casing are not considered as a casing part.
Chassis	A frame that is provided inside a casing and that is needed to support the casing parts and main parts of the product. When a casing also serves as a chassis, as in a notebook PC, its external appearance function takes precedence and it is treated as a casing part.
Assembly	Unit composed of at least two components linked by power or design.
Electric/electronic assemblies and parts	Assemblies (parts) which include at least one electric or electronic component.
Rare metals	31 kinds of minerals (for rare earth, 17 elements are considered as one mineral type) defined in the Special Subcommittee on Rare Metal General Strategy, Mining Industry Council, Ministry of Economy, Trade and Industry in August 1984.
Reused parts	Parts that have previously been used, and reused.
Recycled plastic part	Plastic part which contains recycled plastics
Recycled plastic	Plastic containing post-consumer material and pre-consumer material
Pre-consumer material	Material or rejected product generated from a disposal route in a product manufacturing process, excluding those that are generated in a material manufacturing process and that are reused as raw materials within the same process (plant).
Post-consumer material	Materials or products disposed of after they have been used as goods.

■ Applicable parts

Each requirement applies to specific assemblies listed in the column “Target”

■ Category classification

Requirements are classified as either “Mandatory” or “Optional”.


Mandatory item	Requirements which must be met
Optional item	Requirements which should be met

■ Reference specification

Omitted

No	Requirement	Target product	Category	Conformity	Interpretation																				
A. Evaluation of reduce																									
[resource saving in product]																									
1	The product is designed giving consideration to weight reduction/volume reduction.	Equipment	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	To reduce the weight and volume of devices will lead to economization on resources. It, however, is important to work out the design so that the use of the products over long terms will not be harmed, as reduction of weight or volume of devices will affect the product strength.																				
2	If plastic is used in casing or any parts, recycled plastics or biomass plastics whose reduction effect of environmental load has been confirmed shall be used in one or more parts.	Casing part or plastic part	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No <table border="1"> <thead> <tr> <th>Part(Material)</th> <th>Recycled plastic or biomass plastic</th> <th>Mass of the part (g)</th> <th>Concentration rate* (%)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Part(Material)	Recycled plastic or biomass plastic	Mass of the part (g)	Concentration rate* (%)																	*content rate: biobased synthetic polymer content for plant-based plastic The "parts made of biomass plastic regarding which the effect of reducing the environmental burden has been confirmed" shall mean those for which the following viewpoints have been evaluated voluntarily, with reference to the "handling of plant-based plastics in relation to the Eco Mark certification criteria." •Traceability of biomass plastic(Raw Resin) •Confirmation of the content rate of bio-based polymers. •Confirmation of the effect of reducing environmental burden. •Confirmation about hazardous matters. Recyclability after use.
Part(Material)	Recycled plastic or biomass plastic	Mass of the part (g)	Concentration rate* (%)																						
3	Reused parts or recycled magnesium alloy parts are used for the equipment.	Equipment	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No <table border="1"> <thead> <tr> <th>Part(Material)</th> <th>Reused part/recycled Mg part</th> <th>Mass of the part (g)</th> <th>Content rate* (%)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	Part(Material)	Reused part/recycled Mg part	Mass of the part (g)	Content rate* (%)																	It is required to be used in at least one part, without regard to the content rate.
Part(Material)	Reused part/recycled Mg part	Mass of the part (g)	Content rate* (%)																						
4	The rate of post-consumer recycled plastics contained in the plastics used in the devices relative to the total plastic weight (excluding printed circuit boards and electronic components) is equal to or more than 10%.	Equipment	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No <table border="1"> <thead> <tr> <th>The rate of post-consumer recycled plastics contained in the plastics relative to the total plastic weight</th> <th>(%)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> </tbody> </table>	The rate of post-consumer recycled plastics contained in the plastics relative to the total plastic weight	(%)			* Only the corresponding parts may be filled out. Either the guaranteed lowest figures or figures with certain ranges will be accepted.																
The rate of post-consumer recycled plastics contained in the plastics relative to the total plastic weight	(%)																								
5	The rate of biobased synthetic polymer contained in the plastics used in the devices relative to the total plastic weight (excluding printed circuit boards and electronic components) is equal to or more than 10%.	Equipment	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No <table border="1"> <thead> <tr> <th>The rate of biobased synthetic polymer contained in the plastics relative to the total plastic weight</th> <th>(%)</th> </tr> </thead> <tbody> <tr><td> </td><td> </td></tr> </tbody> </table>	The rate of biobased synthetic polymer contained in the plastics relative to the total plastic weight	(%)			* Only the corresponding parts may be filled out. Either the guaranteed lowest figures or figures with certain ranges will be accepted.																
The rate of biobased synthetic polymer contained in the plastics relative to the total plastic weight	(%)																								
[product longevity]																									
6	It is possible to further improve the system performance or to extend new functions.	Equipment	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No / <input type="checkbox"/> Not applicable	If the system performance is improved, the lives of the appliances may be extended. Specific examples are upgrading of CPUs, optical drives, HDDs and main memory, as well as whether the appliances have extension slots. This item includes the improvement of appliance performance by using external devices via USB ports, etc.																				

No	Requirement	Target product	Category	Conformity	Interpretation
7	Batteries attached to the appliance (internal batteries) can be replaced or removed without the need of replacing the entire printed circuit board incorporated when the batteries reach the end of their usefulness or when they are repaired.	Internal battery		<input type="checkbox"/> Yes/ <input type="checkbox"/> No / <input type="checkbox"/> No internal batteries used	If the structure allows easy replacement of batteries when the batteries run out, the lives of the appliances may become longer as disposal of the devices or the printed circuit boards can be avoided. The case where repairing experts can replace batteries when repairing devices shall be considered to be application of the provision of this section.
B. Evaluation of reuse					
[usability of reused part (easiness in assembly is covered by "C. Evaluation of recycle)]					
8	It is possible to install recycled assemblies in the product.	assembly		<input type="checkbox"/> Yes/ <input type="checkbox"/> No	Preferably, manufacturers can install recycled parts in equipment as spare parts or as ETN (equivalent to new) parts. An "ETN part" means a reused part that is equivalent to a new part. At the evaluation, check whether such parts can be installed according to the specs.
[criteria for reuse]					
9	The lives (the MTBFs) of the units or parts or the dates of manufacture are well informed.	assembly		<input type="checkbox"/> Yes/ <input type="checkbox"/> No	In making decisions for reuse of products, it is important to establish methods of predicting lives of the appliances to be reused and of assessing reliability. It is therefore important to be informed of dates of manufacture of units or parts.
C. Evaluation of recycle					
[selection of recyclable material and parts]					
10	Each plastic part is composed of up to two types of mutually separable polymers or polymer blends.	Plastic part		<input type="checkbox"/> Yes/ <input type="checkbox"/> No / <input type="checkbox"/> Not applicable	
11	If labels, etc. to be attached to plastic casing parts are difficult to separate, they must be made of the same material as the plastic parts, or any material that does not prevent recycling. This, however, does not apply for the labels which cannot be procured at the responsibility of the applicant (i.e., labels provided and attached externally).	Casing part weighing 25g or more		<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No plastic casing part weighing 25g or more used, or no labels attached	If there is no indication of the contents of materials, it will be required to take out the corresponding part when being processed in order to recycle as high-grade material. Otherwise, the entire portion will be recycled as low-grade material. Removal of labels is a work requiring much trouble. This is why the "guideline for indication of parts made of plastics, etc. and the recycling marks of domestic electric appliances" provides that it is desirable that the indications of materials, such as labels, are made of the same material as that of the plastic parts to which the labels, etc. are attached (compatibilization).
12	Parts are made of unified metallic or plastic materials within the range that their functions are not impeded.	casing part, chassis,		<input type="checkbox"/> Yes/ <input type="checkbox"/> No	The smaller the varieties of materials are, the more efficient the separation and recycling processes are. This requirement does not apply to parts that are demonstrably reused.
13	Metallic painting which may require treatment for removal (metal plating and conductive coating) is avoided for the plastic parts. Direct printing on plastic parts is limited to the minimum required level (example: manufacturer's name).	Casing part weighing 25g or more		<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No plastic casing part weighing 25g or more used	Large-area coating layer on the surface of plastic parts require treatment for removal. Laser markings are not considered as "prints" referred to herein. This item does not apply to the coating using the same materials with the plastic parts. .
14	Such surface processing as painting, resin coating and UV coating is avoided for the plastic casing parts.	Casing part weighing 25g or more		<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No plastic casing part weighing 25g or more used	This is significant for the reduction of wastes produced during the recycling process of casing parts as well as for the improvement of recyclability.
[structure with easy disassembly and easy separation]					
15	Such assemblies as printed circuit boards and optical drive systems are separable from the chassis, casing parts or other assemblies. Assemblies are made of mutually incompatible materials separable or connected by separation aids.	casing part, chassis, electric/electronic assemblies		<input type="checkbox"/> Yes/ <input type="checkbox"/> No	Connections between casing and chassis as well as between chassis and electric/electronic assemblies are important. Their separability is a prerequisite for separate reuse/recycling of assemblies and materials and for a quick and reliable separation of components containing hazardous substances. Glued nameplates (i.e. company logos and stickers) are also included. The term "separation aids" refers to predetermined breaking points, for example

No	Requirement	Target product	Category	Conformity	Interpretation
16	Connections to be separated can be easily found.	casing part, chassis, electric/electronic assemblies	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	The minimal strategy for recycling is to remove hazardous substances. For example, electric/electronic assemblies and components listed in Annex VII of the revised WEEE Directive (2012/19/EU Directive), such as batteries and condensers which have a risk of containing constituents having hazardous substances must be easy to find and separate.
17	A metal insert moduled part is not used.	Plastic part weighing 25g or more	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No plastic part weighing 25g or more used	
18	Plastic parts are not bound in such manners that are impossible to separate with common tools, by welding or with swages.	Plastic part weighing 25g or more	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No/ <input type="checkbox"/> No plastic part weighing 25g or more used	
19	The disassembly can be performed by one person.	Entire unit	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	If the undercut angle is more than 90°, any number of snap-on connections in the same joining direction can be assembled simultaneously, whereas this may not hold for disassembly. It is considered that this requirement is not met if more than three snap-on connections have to be loosened at the same time.
20	Disassembly for recycling can be completed with common tools.	casing part, chassis, electric/electronic assemblies	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	"Common tools" mean commonly available tools. Excludes wireless equipment defined by the Japan Radio Law and casing parts of an AC adapter.
21	Screws to be removed can be disassembled with 3 types (sizes) of drivers.	Equipment	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	Standardized and uniform connecting elements facilitate disassembly. The fewer tools are used, the simpler assembly and disassembly are performed, which can reduce the time of dismantling.
22	The number of screws is designed in consideration of reduction. Specifically, the number of screws has been tracked.	Equipment	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	Reduction of the number of screws leads to reduction of disassembly man-hours. The level of disassembly for tracking the number of screws refers to the level of disassembly in a recycling plant that complies with the Act for Recycling of Specified Kinds of Home Appliances, in general. More specifically, it covers removal of a casing part and a chassis, and removal from the casing or chassis of a panel module/electronic component/board/HDD/optical display drive, etc., and does not cover disassembly of an HDD or interior of an optical disk drive, disassembly of parts attached to a circuit board, or disassembly of interior of an electronic component.
[easiness in separation]					
23	In consideration with ISO1043 -1-4 (corresponding standard JIS K6899 1-4), plastic parts shall be marked at least in accordance with ISO11469 (corresponding standard JIS K6999). However, this need not apply to the parts with weight less than 25g or flat area less than 200mm ² or the transparent parts.	Entire unit	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	The marking of plastics shall enable all recycling companies to sort plastics by type.
24	The screws on the plastic casing parts to be removed can be found easily. Specifically, screw positions are indicated on plastic parts in the vicinity of the screws. However, this does not apply to indication of any plastic part with weight of less than 25 g or flat part less than 200 mm ² . [example] 	Casing part	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No / <input type="checkbox"/> No applicable parts	Screws that can be easily found during manual disassembly will increase the work efficiency.
25	Blind screws are not used.	Casing part	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	If blind screws are used, it takes more time to find them during disassembly.

No	Requirement	Target product	Category	Conformity	Interpretation
26	Secondary batteries are indicated according to the “Guideline of Identification of Small Rechargeable Batteries” of the Battery Association of Japan.	Internal battery	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No <input type="checkbox"/> No secondary battery	Secondary batteries need to be identified in order to promote collection and recycling thereof.
[Indication for realizing high-quality recycling]					
27	On the plastic casing parts weighing 25g or more, grade indications describing details of the plastic materials (manufacturer of the resin, trade name, serial number, etc.) are made together with the indication of materials.	Casing part	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No <input type="checkbox"/> No plastic casing part weighing 25g or more used	In an attempt to promote the high-grade material recycling, the “guideline for assessment of designs of personal computer environments” recommends the indication of grade describing details of plastic materials.
D. evaluation of easy handling					
[recording of process, documentation of procedure]					
28	The manufacturer performed a trial disassembly in accordance with items 14 through 26 of this checklist, and kept its record.	Entire unit	[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	It can be confirmed by actually trying to disassemble a prototype device whether or not the appliance is such structured that enables easy disassembly/recycling.
29	The documents on disassembly, maintenance and repair is prepared as an information disclosure on the handling.	Entire unit	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	
[sophistication of recycling]					
30	To facilitate recycling of rare metals (<u>neodymium, dysprosium, cobalt and tungsten</u>) contained in equipment, it is desirable that a system (provision of information, ease of part identification, etc.) is available that can identify parts containing many rare metals and provide the information to recycling operators (recyclers). Specifically, Table 1 shall be checked for parts that especially contain many rare metals.	Entire unit	[Optional]	<input type="checkbox"/> Yes (fill in Table 1) <input type="checkbox"/> No	It is required to know of the elements which are contained in appliance in a relatively large amount and for which replacement or recycling technologies are being developed, and to recycle them efficiently. In this item, five elements (neodymium, dysprosium, cobalt, tungsten and tantalum) are highlighted, which are elements highly possibly used in appliances listed in “types of mineral on which emphasis of recycling should be placed” in the “vision of recycling of useful metals in used products (second report)” (October 2012), and it is required to identify the part that contains much rare metals as well as the system to easily separate the corresponding parts, to display identification and to easily provide information to the recycling experts. With regard to the provision of information, one possible example is to manage information at the manufacturers of appliances in accordance with the form specified by WEEE Directive.
31	To facilitate recycling of rare metals (<u>tantalum</u>) contained in equipment, it is desirable that a system (provision of information, ease of part identification, etc.) is available that can identify parts containing many rare metals and provide the information to recycling operators (recyclers). Specifically, Table 1 shall be checked for parts that especially contain many rare metals.	Entire unit	[Optional]	<input type="checkbox"/> Yes (fill in Table 1) <input type="checkbox"/> No	
32	With regard to the rare metals other than those provided for in Table 1, the parts which contain two or more rare metal elements are informed.	Entire unit	[Optional]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No / <input type="checkbox"/> confirmed less than 2 element used	In order to recycle rare metals, it is desirable to understand information in the product design stage. In this item, it is recommended to grasp the amount of such rare metals contained, although it is not included in the requirements.
All [mandatory] items are met and answered “Yes”			[Mandatory]	<input type="checkbox"/> Yes/ <input type="checkbox"/> No	
Number of conformed [optional] items			Point conformed [] / number of selected [optional] items []		

Table 1. Rare metals specified in No. 30 and 31

Rare metals	Parts to be checked	Fill in this column	Example of efforts to improve ease of recycling
Neodymium, dysprosium	Whether or not HDD is used Whether or not a neodymium magnet is used Whether or not it is used in a motor Whether or not it is used in a voice coil motor (VCM)	<input type="checkbox"/> Neodymium, dysprosium are used <input type="checkbox"/> Not used <input type="checkbox"/> Unclear	<input type="checkbox"/> Providing information on whether or not there is a corresponding part, as per a request from a recycling operator <input type="checkbox"/> Ease of separation of the corresponding part
Cobalt	Use of cobalt in a positive electrode of a lithium ion battery	<input type="checkbox"/> Cobalt is used <input type="checkbox"/> Not used <input type="checkbox"/> Unclear <input type="checkbox"/> No lithium ion battery is used	<input type="checkbox"/> Providing information on whether or not there is a corresponding part, as per a request from a recycling operator <input type="checkbox"/> Ease of identification of parts: Indication of "Maximum amount of metal contained in the positive electrode" based on "Guideline for Recycling Marking (5th Edition)"
Tungsten	Whether or not it is used in a heatsink	<input type="checkbox"/> Tungsten is used <input type="checkbox"/> Not used <input type="checkbox"/> Unclear <input type="checkbox"/> Not a wire dot method	<input type="checkbox"/> Providing information on whether or not there is a corresponding part, as per a request from a recycling operator <input type="checkbox"/> Ease of separation of the corresponding part
Tantalum	Whether or not a tantalum capacitor is used	<input type="checkbox"/> Tantalum is used <input type="checkbox"/> Not used <input type="checkbox"/> Unclear	<input type="checkbox"/> Providing information on whether or not there is a corresponding part, as per a request from a recycling operator <input type="checkbox"/> Identification by color of a capacitor to be used <input type="checkbox"/> Ease of separation of the corresponding part

<For Reference> No.16 Appendix 1

As a minimum, the following substances, mixtures, and components have to be removed from any separately collected waste electrical/electronic equipment.

(Annex VII of Revised WEEE Directive (2012/19/EU Directive))

- polychlorinated biphenyls (PCB) containing capacitors in accordance with Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT),
- mercury containing components, such as switches or backlighting lamps,
- batteries,
- printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres,
- toner cartridges, liquid and paste, as well as colour toner,
- plastic containing brominated flame retardants,
- asbestos waste and components which contain asbestos,
- cathode ray tubes,
- chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC),
- gas discharge lamps,
- liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimetres and all those back-lighted with gas discharge lamps,
- external electric cables,
- components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances,
- components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation,
- electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume).

These substances, mixtures and parts shall be disposed of or recovered in compliance with Directive 2008/98/EC.

Appendix 2 Packaging material checklist

■List of packaging material used for the product.

Indicate a name, weight, ratio of recycled materials in use of packaging materials that are used per product.

No.	Packaging material used for the product	weight[g]	Ratio of recycled material in product
1			%
2			%
3			%
Total			

Entry examples of the packaging materials in use: cardboard, polyethylene, foamed polystyrene, pulp mold.

■Packaging material checklist

It is determined that the product complies with the criteria when it meets all of the mandatory requirements:

No.	Requirement	Compliance	Remarks
1	Is the product designed giving consideration to weight reduction/volume reduction?	[Mandatory] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	
2	Is the product designed giving consideration to use of recycled materials? (Waste paper, recycled plastic, etc.)	[Mandatory] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	“Consideration” shall mean examination of the possibility of use of recycled materials at the stage of selection of materials for packaging or the designing.
3	Is the recycled waste paper used 70% or more, or the recycled plastic used 40% or more?	[Optional] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	If any recycled material is used, indicate it in the above list.
4	Is the product designed giving consideration so that the amount of ink to be used in printing on a surface of packaging materials is reduced?	[Optional] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	It is desirable to share materials by products of a same company or standardize packaging materials used for a same product.
5	Is the product such designed that sharing of materials is promoted?	[Mandatory] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	It is desirable to share materials by products of a same company or standardize packaging materials used for a same product.
6	Is the product designed giving consideration to selection of a material that is easy to recycle or reuse?	[Mandatory] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	It is desirable to select a material that consumers can easily send to recycling, etc.
7	If dissimilar materials are used in combination, is the product such designed that separation of parts is easy?	[Mandatory] <input type="checkbox"/> Yes/ <input type="checkbox"/> No <input type="checkbox"/> No combined use of dissimilar materials	Dissimilar materials herein stated refer to metals and plastics, paper and plastics, etc., and do not mean a difference by a type of plastic.
8	Whether materials are indicated according to the regulations or JIS standard, etc., so that the product can be easily recycled or reused.	[Mandatory] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	It is necessary to provide an appropriate indication so that consumers can send the product to recycling, etc. In Japan, the Law for Promotion of Sorted Collection and Recycling of Containers and Packaging is in effect, according to which the Report of the Committee for Considering Identification of Container and Packaging, etc. provides for the identification marks and method of displaying materials. As to products supplied to corporations, too, display of material shall be indispensable; however, indication of materials may be omitted based on such provisions concerning the identification marks as “For the case of solid-color container and packaging” and “For the container and packaging on which the display cannot be attached.”
9	Are materials to be used in packaging selected so that use of any chemical substances which affect the environment is avoided or reduced? (Non-use of polymers containing halogens, HCFC, etc. (Appendix 3))	[Optional] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	If any chemical substance that affects the environment is used, it will be a problem when the product is recycled or disposed of.
10	Is there a system for collection and reuse or recycling of packaging materials?	[Optional] <input type="checkbox"/> Yes/ <input type="checkbox"/> No	As stated in the considerations of Act for Promoting Green Purchasing, it is desirable that the product has a collection/recycling system. For usage for individual use, compliance to the Law for Promotion of Sorted Collection and Recycling of Containers

	and Packaging shall be regarded as the satisfaction of this item.
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Appendix 3 Substances Specified in “Packaging material checklist” No.9

Name of substance	Name of substance
Dichlorofluoromethane (HCFC-21)	Trichlorotetrafluoropropane (HCFC-224)
Chlorodifluoromethane(HCFC-22)	Dichloropentafluoropropane (HCFC-225)
Chlorofluoromethane (HCFC-31)	3,3-Dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)
Tetrachlorofluoroethane (HCFC-121)	1,3- Dichloro -1,1,2,2,3-pentafluoropropane (HCFC-225cb)
Trichlorodifluoroethane (HCFC-122)	Chlorohexafluoropropane (HCFC-226)
Dichlorotrifluoroethane (HCFC-123)	Pentachlorofluoropropane (HCFC-231)
2,2-Dichloro-1,1,1-trifluoroethane (HCFC-123)	Tetrachlorodifluoropropane (HCFC-232)
Chlorotetrafluoroethane (HCFC-124)	Trichlorotrifluoropropane (HCFC-233)
2-Chloro-1,1,1,2-tetrafluoroethane (HCFC-124)	Dichlorotetrafluoropropane (HCFC-234)
Trichlorofluoroethane (HCFC-131)	Chloropentafluoropropane (HCFC-235)
Dichlorodifluoromethane (HCFC-132)	Tetrachlorofluoropropane (HCFC-241)
Chlorotrifluoroethane (HCFC-133)	Trichlorodifluoropropane (HCFC-242)
Dichlorofluoroethane (HCFC-141)	Dichlorotrifluoropropane (HCFC-243)
1-Dichloro-1-Fluoroethane (HCFC-141b)	Chlorotetrafluoropropane (HCFC-244)
Chlorodifluoroethane (HCFC-142)	Trichlorofluoropropane (HCFC-251)
1-Chloro-1,1-difluoroethane (HCFC-142b)	Dichlorodifluoropropane (HCFC-252)
Chlorofluoroethane (HCFC-151)	Chlorotrifluoropropane (HCFC-253)
Hexachlorofluoropropane (HCFC-221)	Dichlorofluoropropane (HCFC-261)
Pentachlorodifluoropropane (HCFC-222)	Chlorodifluoropropane (HCFC-262)
Tetrachlorotrifluoropropane (HCFC-223)	Chlorofluoropropane (HCFC-271)

Group I, Annex C of Montreal Protocol