

## Eco Mark Product Category No.145

# “Projectors Version2.0” Certification Criteria

### —Applicable Scope—

High-magnified projectors, an image conversion unit of which is a “transmission-type device” or “reflection-type device”, etc., and that are of a front projection type capable of magnifying and projecting images of a computer, DVD, etc.

Established August 1, 2017

Japan Environment Association  
Eco Mark Office

Expiration date July 31, 2024

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.145

## “Projectors Version2.0” Certification Criteria

Japan Environment Association  
Eco Mark Office

### 1. Purpose of Establishing Certification Criteria

Omitted

### 2. Applicable Scope

Applicable to high-magnified projectors an image conversion unit of which is a “transmission-type device” or “reflection-type device”, etc., and that are of a front projection type capable of magnifying and projecting images of a computer, DVD, etc.

### 3. Terminology

Light output (Brightness)	Brightness when light is projected onto the screen. It is a value in lumen (lm), defined in JIS X6911: 2015 (ISO/IEC21118:2012), Exhibit 3, by dividing a project plane into nine 3-by-3 areas and multiplying average illuminance (in the unit of lux [lx]) by the area of the project plane (in the unit of square meter [m <sup>2</sup> ]). In addition, the nominal effective flux (brightness) to be stated in a catalog, etc., shall be indicated by an average value of an entire product when it is shipped.
Solid-state light source	A solid-state device that supplies electricity or other energy to a solid body and generates specific light radiation when excited, including light emitting diode (LED) and laser diode (LD).
Service parts	Parts for repairs that are essential to maintain product functionality/performance.
Time for lamp replacement	Average hours of lamp operating till the effective flux (brightness) when a product is used (standard mode) falls below 50% of the nominal effective flux (brightness) and standard hours to lead a proper lamp replacement.
Short focus projector	Projectors capable of projection on the screen equal to or wider than 1.2 m within a distance of 1m
Ultra short focus projector	Projectors capable of projection on the screen equal to or wider than 1.2 m within a distance of 0.5 m
Standby power consumption	Minimum power consumption at which a product may be connected to a main power source and maintained for an indefinite period of time. Standby is a product minimum power consumption mode.
Eco mode	A mode that can set the effective flux (brightness) of about 80% of the nominal effective flux (brightness) for the purpose of reducing power consumption and extending life of lamp.
Plastic	Material composed of single or multiple polymers, plus additives, fillers, etc. which are added to the polymer(s) to give specific characteristics
Housing	Outer covers

Housing parts	A part that protects a device from environmental influences and that prevents users from contacting moving, light-emitting or high-voltage components.
Prescribed constituent	A material component added for the intended purpose of giving certain characteristics to a product. Impurities that are technically unavoidable in the manufacturing process are not included.

#### 4. Certification criteria and Certification Procedures

The corresponding boxes in the Attached Certificates shall be checked/ filled in, stamped with the applicant company seal and submitted. When the product is sold with no lens attached to the product body, the product shall conform to the certification criteria with the specifications reflecting attachment of the set standard lens.

<General rule>

Analysis and testing bodies shall be run in accordance with ISO/IEC 17025 (not essential to be certified) (corresponding JIS Q17025(General requirements for the competence of testing and calibration laboratories)). Applicants shall bear the expenses for preparing documents and for the analyses.

Special requirements, if performed at the laboratories of manufacturers: if competent authorities are monitoring the sampling and analysis process, if the analyses and tests are authorized, or if the manufacturer has developed a quality system for sampling and analysis and has received the ISO 9001 (corresponding JIS Q9001) certification, or if the manufacturer has ISO 9001-compliant internal regulations concerning its quality system for sampling and analysis and performs measurements in line with those internal regulations, the laboratory of the manufacturer is authorized to perform analysis and tests

note) When overseas ecolabelling is acquired by utilizing the Mutual Recognition Agreement (MRA), it is required that testing is conducted at a testing laboratory certified by ISO/IEC 17025.

#### 4-1.Environmental certification criteria and certification procedures

##### 4-1-1 resource conservation

(1) Mass of a product main body (not including accessories) shall conform to Table 1.

[Certification Procedure]

Mass of a product main body shall be indicated in the Attached Certificate. The applicant shall also submit a copy of a corresponding page of an instruction manual, leaflet, website, etc. indicating the mass of the product main body.

Table 1 Criteria for Mass of Product Main Body

Light output (Brightness) x[lm]	Mass of Product Main Body [kg]
$x < 2500$	$\leq 4 \times \alpha \times \beta$
$2500 \leq x < 4000$	$\leq 5 \times \alpha \times \beta$
$x \geq 4000$	$\leq 0.003 \times x \times \alpha \times \beta$

$\alpha$ : 1.2 for short focus projector and ultra short focus projector, or 1.0 for others

$\beta$ : 1.2 for projectors using a solid-state light source or 1.0 for others.

However, the value shall be uniformly not more than 7.5 kg when light output is less than 4,000 lm and the product is an ultra short focus projector.

(2) Packaging material shall give consideration to resource conservation. Specifically, attached table 1 “Packaging material checklist” shall be satisfied.

## [Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, attached table 1 “Packaging material checklist” shall be submitted.

- (3) Supply of the spare parts shall be continued for five years after suspension of the product manufacturing.

## [Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of the users manual, leaflet and website indicating the matters related to this item shall be submitted.

- (4) Repair subcontract systems shall be available, and repairs shall be carried out as requested by the users (repair system). The following information on the repair systems shall be provided:

- a. information on repair subcontract system is available;
- b. information on the scope of repair (details of services), contact address, etc. are provided to users.

## [Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of the users manual, leaflet and website indicating the matters related to this item shall be submitted.

- (5) Replacement time for lamp of the light source (standard hours to lead a proper lamp replacement) shall be 3000hours or more.

## [Certification Procedure]

The time for lamp replacement (standard hours to lead a proper lamp replacement) shall be indicated in the Attached Certificate. The applicant shall also submit any evidence data (test results, etc.) on calculation of the time for lamp replacement. In addition, to calculate the time for lamp replacement, use conditions in a normal mode in which a lamp is installed in a device shall be assumed.

- (6) The product shall have a design that enables disassembly for recycling. Specifically, the Attached table 3 “Product design checklist” shall be satisfied.

## [Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, entry table 2 “Product design checklist” shall be submitted.

#### 4-1-2 Prevention of global warming

- (7) Power consumption in use shall conform to the following criteria.

$$\text{Power consumption [W]} \leq 0.060[\text{W/lm}] \times x[\text{lm}] \times \alpha \times \beta + 85[\text{W}]$$

To x[lm], apply the light output specified in the specifications based on JIS X 6911.

A reference value of power consumption shall be calculated by multiplying a coefficient per brightness [lm] by each of the following values

A value to multiply for the short focus projector	α:1.1
A value to multiply for the ultra short focus projector	α:1.2
A value to multiply for the projector using a solid-state light source.	β:1.5

## [Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate, and test

results on light output and the power consumption based on JIS X 6911 (ISO/IEC21118) shall be submitted. In addition, power consumption shall be measured in a normal mode (with maximum brightness) with no other function such as voice, etc. set.

The name and address of the analysis test center as well as conformance to ISO 9001 (corresponding JIS Q9001) or ISO/IEC17025 (corresponding JIS Q17025) shall also be indicated in the Attached Certificate.

- (8) Standby power consumption shall be 0.40W or less for every model. However, this item is not applicable on the network latency.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, test results shall be submitted.

The name and address of the analysis test center as well as conformance to ISO 9001 (corresponding JIS Q9001) or ISO/IEC17025 (corresponding JIS Q17025) shall also be indicated in the Attached Certificate.

- (9) The product shall have the function of Eco mode. Power consumption in Eco mode shall be at least 15% less than the power consumption measured in item (7).

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate, and. In addition, test results on light output and power consumption based on JIS X 6911 (ISO/IEC21118) shall be submitted. In addition, power consumption shall be measured in a normal mode with no other function such as voice, etc. set. Power consumption shall be measured in Eco mode without using other functions including audio. If there are two or more Eco modes, the mode that meets the requirements of Eco mode described in Terminology above shall be used for measurement.

The name and address of the analysis test center as well as conformance to ISO 9001 (corresponding JIS Q9001) or ISO/IEC17025 (corresponding JIS Q17025) shall also be indicated in the Attached Certificate.

#### **4-1-3 Restriction and control of hazardous substances**

- (10) The content rate of lead, mercury, cadmium and those compounds, hexavalent chromium compounds, polybrominated biphenyl(PBB), polybrominated diphenyl ether(PBDE), etc. in the product shall comply with ANNEX II (Table 2) of the [Commission Delegated Directive (EU)2015/863 of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances]. However, this does not apply to those substances specified in ANNEX III.

[Certification Procedure]

Compliance with this item and the confirmation method 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 2 Content rate

Name of the material	Content rate[wt%]
Lead and its compounds	≤ 0.1
Mercury and its compounds	≤ 0.1
Cadmium and its compounds	≤ 0.01
Hexavalent chromium and its compounds	≤ 0.1
Polybrominated biphenyl(PBB),	≤ 0.1
Polybrominated diphenyl ether(PBDE)	≤ 0.1
Bis (2-ethylhexyl) phthalate (DEHP) *1	≤ 0.1
Butyl benzyl phthalate (BBP) *1	≤ 0.1
Dibutyl phthalate (DBP) *1	≤ 0.1
Diisobutyl phthalate (DIBP) *1	≤ 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).

\*1 Applicable to the applications submitted on or after July 22, 2019.

- (11) 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. In addition, 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), Hexabromocyclododecane (HBCD) and other organohalogen compounds added 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.

[Certification Procedure]

Compliance with this item and the confirmation method shall be indicated in the Attached Certificate. In addition, Form 3 “plastic material list used for plastic housing parts weighing over 25g 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 confirmation is performed based on JIS Z 7201 “Management of chemical substances in products - Principles and guidelines”

- (12) Plastic housing parts weighing over 25g shall not contain the substances in the following a to e, as prescription constituents.
- Carcinogenic substances based on Category 1A or 1B of Table 3.1 in Annex VI of EC Regulation 1272/2008/EC
  - Mutagen based on Category 1A or 1B of Table 3.1 in Annex VI of EC Regulation 1272/2008/EC
  - Reproductive toxic substances based on Category 1A or 1B of Table 3.1 in Annex VI of EC Regulation 1272/2008/EC
  - 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
  - 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 and the confirmation method shall be indicated in the Attached Certificate. In addition, the list of plastic materials used (Form 3) shall be submitted. In addition, it is recommended that confirmation is performed based on JIS Z 7201 “Management of chemical substances in products - Principles and

guidelines”

- (13) Additives (colorant, etc) used for glass parts (projection lens) shall not contain cadmium, lead, mercury, hexavalent chromium, and their compounds as prescription constituents. However, if addition as prescription constituents is needed in terms of maintenance of performance, the content reference value of Table 2 in 4-1-3(10) shall be met on the basis of a part.

[Certification Procedure]

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

- (14) If a mercury lamp is used for a light source, information calling for attention to use of mercury shall be provided, and if the mercury lamps are sold to companies, there shall be a mechanism for collecting used mercury lamps or used projectors such as extensive authorization system, etc. and information on collection shall also be provided.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, a copy of a corresponding part of an instruction manual, leaflet, website, product label sticker and any explanatory material describing the mechanism for collection shall be submitted. The result of the collection, etc. shall be reported upon Eco Mark Office’s request.

- (15) In manufacturing the applied 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 materials 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.

[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 business of manufacturing the applied product or the manager of the relevant plant (entry or attachment of the list of names of the Environmental Laws, etc.) must be submitted. (Example 4)

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) Mercury, Cadmium and Lead in a battery built in the product shall comply with Table 3.

Table 3. criteria for heavy metals in batteries

	EU Directive 2013/56/EU		Indication requirement in EU Directive 2006/66/EC
	Mercury [wt%]	Cadmium [wt%]	Lead [wt%]
Content rate	≤ 0.0005	≤ 0.002	≤ 0.004

[Certification Procedure]

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

#### 4-1-4 Information provision to users

- (17) Information for users shown in a. to e. below shall be provided in an instruction manual, leaflet, home page, etc.:
- Information on whether an Eco mode is available
  - Information on a rough standard of the time for lamp replacement (hours), lamp replacement and proper use that leads to longer life
  - Information on maximum power consumption, standby power consumption
  - Information on LCA result (type III environmental label, etc.) (In the case it is implemented)
  - Information on disposal or recycling of product after use
  - Information on the products with laser device as light source (if used)

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of the users manual, leaflet and website indicating information provided to users shall be submitted.

#### 4-2. Quality criteria and certification procedure

None

#### 5. Considerations

In manufacturing products, it is desirable to consider the following, although they are not requirements for certification. The conformance to the individual criteria item shall be indicated on in Attached Certificates.

- (1) A mercury lamp shall not be used in the light source.
- (2) The noise emission at normal mode shall be measured in accordance with the method

specified in ISO 7779 (corresponding JIS X 7779), and “Declared A-Weighted Sound Power Level,  $L_{pam}$ ” in accordance with ISO 9296 (corresponding JIS X 7778) shall satisfy Table 4.

Table 4 criteria on noise emission

Light output (Brightness) x[lm]	noise [dB]
$x < 2500$	$\leq 32$
$2500 \leq x < 4000$	$\leq 38$
$x \geq 4000$	$\leq 44$

Or, the value of “the declared A-weighted sound power level  $L_{Wad}$ ” specified in ISO 9296 (corresponding to JIS X 7778) shall satisfy the formula below and not exceed 50dB.

$$L_{WAD} \leq 14 * \log(x[lm] + 500)$$

(3) To facilitate recycling of rare metals (neodymium, dysprosium, cobalt, tungsten, and tantalum) 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 5 below shall be checked for parts that especially contain many rare metals.

Table 5. Parts that should be checked for rare metal and example of efforts to improve ease of recycling

Rare metals	Parts to be checked	Example of efforts to improve ease of recycling
Neodymium, Dysprosium	Whether or not a neodymium magnet is used Whether or not it is used in a motor	- Providing information on whether or not there is a corresponding part, as per a request from a recycling operator - Ease of separation of the corresponding part
Cobalt	Use of cobalt in a positive electrode of a lithium ion battery	- Providing information on whether or not there is a corresponding part, as per a request from a recycling operator - 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 a heatsink is used Whether or not a mercury lamp is used in electrode.	- Providing information on whether or not there is a corresponding part, as per a request from a recycling operator - Ease of separation of the corresponding part
Tantalum	Whether or not a tantalum capacitor is used	- Providing information on whether or not there is a corresponding part, as per a request from a recycling operator - Identification by color of a capacitor to be used - Ease of separation of the corresponding part

**6. Product Classification, Indication and Others**

Omitted.

---

August 1, 2017	Established (Version 2.0)
July 31, 2024	Expiration date

Certification Criteria of this Product Category shall be revised as needed.

**Attached table 1 “Packaging material checklist”****■List of packaging material used for the product.**

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

No.	Packaging material used for the product	mass[g]	Ratio of recycled material in product
1			%
2			%
3			%
<b>Total</b>			

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?	<b>[Mandatory]</b> <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.)	<b>[Mandatory]</b> <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?	<b>[Optional]</b> <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?	<b>[Optional]</b> <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?	<b>[Mandatory]</b> <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?	<b>[Mandatory]</b> <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?	<b>[Mandatory]</b> <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.	<b>[Mandatory]</b> <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))	<b>[Optional]</b> <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?	<b>[Optional]</b> <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.

**Attached Table 2 HCFC 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

**Attached table 3 Product design checklist (1/3)****Applicable Scope**

The requirements apply to certain sub-assemblies of basic unit of equipment and consumables

Assembly	Unit composed of at least two components linked by power or design.
Chassis	Parts with functions serving as a frame to support the main parts of machines
Recycled plastic	Plastic composed of 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.
Recycled plastic part	Plastic part which contains recycled plastics
Reused plastic part	Plastic part that has been used in the past and are reused
Housing part	Part which protects the machine from environmental effects and user from getting into contact with moving, radiating, or current-carrying components.
Electrical/ electronic assembly	Assembly which includes at least one electric or electronic component.
Polymer alloy (Polymer blend)	General name of multi component polymers obtained by the chemical binding of the polymers of more than two components. Polymer blend is the physical blending of different types of polymers.

**Category classification**

Any requirements are classified as either “Must-Requirement” or “Should-Requirement”.

Must-Requirement	Requirements which must be met
Should-Requirement	Requirements which should be met

**Reference specification**

ECMA341(Environmental Design Considerations for ICT&CE Products) 4th edition  
December 2010, European Computer Manufacturer Association

**Attached table 3 Product design checklist (2/3)**

Must- requirement (items which must be met)

group	No	Requirement	Applicable scope	Compliance?	Remarks	Purpose
Structure and Connection Technology	1	Components made of materials incompatible with each other are connected separably or via separation aids.	Housing parts, chassis, Electrical/ electronic assembly	<input type="checkbox"/> Yes <input type="checkbox"/> No	Compatibility of materials can be checked with reference to Appendix C of ECMA 341 "Polymers Compatibility Guide", etc.	Promoting reuse and recycling
	2	Electrical/ electronic assembly and electrical/ electronic parts are easily traceable and removal. Can parts replacement of which is substantially needed in maintenance/repair be easily removed?	Entire unit, including lamps	<input type="checkbox"/> Yes <input type="checkbox"/> No		Facilitating parts search
	3	Disassembly for recycling can be done with universal tools exclusively	Housing, chassis, Electrical/ electronic assembly	<input type="checkbox"/> Yes <input type="checkbox"/> No	"Universal tools" refers to widely used, commercially available tools. This requirement does not apply to connections where legal regulations have influenced the choice of joining technique.	Facilitating disconnection
	4	Necessary points of application and working space for disassembly tools have been taken into consideration?	Housing parts, chassis, Electrical/ electronic assembly	<input type="checkbox"/> Yes <input type="checkbox"/> No		Facilitating disconnection
	5	Screwed connections between sub assemblies can be separated with no more than 4 tools.	Housing parts, chassis, Electrical/ electronic assembly	<input type="checkbox"/> Yes <input type="checkbox"/> No	Tools can be distinguished by drive type (e.g., Phillips screw driver, flathead screw driver) and drive size (e.g., tool size)	Facilitating disconnection
	6	Disassembly can be done by a single person.	Entire unit	<input type="checkbox"/> Yes <input type="checkbox"/> No	For example, if an undercut angle is 90 degrees or greater, any number of snap-fit joints that snap-fit in the same direction can be fit together simultaneously, but disconnecting them is not always possible. This requirement is considered not satisfied if three or more snap-fit joints cannot be simultaneously disconnected.	Facilitating dismantling
	7	For a part containing mercury, information for sorting out is provided, and the part has structure that allows safe removal for disassembly.	lamps	<input type="checkbox"/> Yes <input type="checkbox"/> No	This requirement does not apply to an LED lamp, laser lamp, etc.	Facilitating dismantling
	8	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 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.	Facilitating dismantling
	9	The manufacturer did a trial disassembly according to 1-8 above.	Entire unit	<input type="checkbox"/> Yes <input type="checkbox"/> No		

**Attached table 3 Product design checklist (3/3)****Must- requirement (items which must be met)**

group	No	Requirement	Applicable scope	Compliance?	Remarks	Purpose
Material Selection and Marking	10	Materials of plastic housing components with similar functions are limited to one material. This requirement shall not apply to parts that have been proved as reused parts or parts which require special functions "heat resistance", "impact resistance" and "abrasion resistance".	Housing parts weighing over 25g	<input type="checkbox"/> Yes <input type="checkbox"/> No	For instance, "functions" refer to "heat resistance", "impact resistance" and "abrasion resistance". Polymer blend (polymer alloy) may be used.	Promoting reuse and recycling
	11	Plastic parts weighing over 25g and larger than 200mm <sup>2</sup> are marked in accordance with ISO11469.	Entire unit (excluding plastic parts in reused composite assembly)	<input type="checkbox"/> Yes <input type="checkbox"/> No	The material identification of plastics shall enable all recycling companies to sort plastics by type.	Promoting reuse and recycling
	12	Secondary batteries are indicated according to the "Guideline of Identification of Small Rechargeable Batteries" of the Battery Association of Japan.	Internal battery	<input type="checkbox"/> Yes <input type="checkbox"/> No	Secondary batteries need to be identified in order to promote collection and recycling thereof.	Facilitating dismantling

**Should-requirement (items which should be met)**

group	No	Requirement	Applicable scope	Compliance?	Remarks	Purpose
Structure and Connection Technology	1	Separable connections are easily traceable.	Housing parts, chassis	<input type="checkbox"/> Yes <input type="checkbox"/> No		Facilitating parts search
	2	For products weighing over 10kg, the supporting surface can be maintained during the entire disassembly work.	Unit to be handled	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not covered	When the supporting surface can be maintained during the disassembly work without turning over the product, disassembly / dismantling will be facilitated.	Facilitating dismantling
Material Selection and Marking	3	Parts made of the same sort of plastics are dyed uniformly or compatibly. Integrated control elements shall be exempt from this requirement.	Housing parts	<input type="checkbox"/> Yes <input type="checkbox"/> No	"Compatible dyeing" stands for different shades of one colour.	Promoting reuse and recycling
	4	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).	Housing parts weighing over 25g	<input type="checkbox"/> Yes <input type="checkbox"/> No	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. .	Promoting reuse and recycling
	5	Such surface processing as painting, resin coating and UV coating is avoided for the plastic casing parts.	Housing parts weighing over 25g	<input type="checkbox"/> Yes	This is significant for the reduction of wastes produced during the recycling process of casing parts as well as for the improvement of recyclability.	Promoting reuse and recycling
	6	Reused plastic part, recycled plastic part or plant-based plastic part with which the environmental load reduction effect is confirmed is used. (If yes,) <input type="checkbox"/> reused plastic part <input type="checkbox"/> recycled plastic part <input type="checkbox"/> plant-based plastic	Entire unit	<input type="checkbox"/> Yes <input type="checkbox"/> No  (If yes,) <input type="checkbox"/> reused plastic part <input type="checkbox"/> recycled plastic part <input type="checkbox"/> plant-based plastic	At least one such part shall be used. The ratio of combination does not matter.	Promoting reuse and recycling  Promoting reuse and recycling