

Eco Mark Product Category No.145

“Projectors Version1.3” 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	July 1, 2010
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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.

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Japan Environment Association
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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

Effective flux (Brightness)	Brightness when light is projected onto the screen. It is a value in lumen (lm) to be determined under the conditions (agreed standard: JIS X6911: 2003, Exhibit 2) defined by the American National Standards Institute, 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 ²]). 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.
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.
Wide projector	Projectors having the resolution of WXGA (1280 x 768 dots) or higher. Denotations to represent the resolution include HVGA (480×320 dots), VGA (640×480 dots), SVGA (800×600 dots), XGA (1024×768 dots), SXGA (1280×1024 dots), SXGA+(1400×1050 dots), UXGA (1600×1200 dots), WUXGA (1920×1200 dots), etc. Designations for the resolution include VGA and XGA, representing H=Half, S=Super, U=Ultra, and WU=Wide Ultra.
Short focus projector	Projectors capable of projection on the screen equal to or wider than 60 inches (1.2 m × 0.9m) within a distance of 1m
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
Polymer alloy (Polymer blend)	General name of multi-component polymers obtained by mixing or chemically binding the polymers of more than two components. A polymer blend is a physical blending of different types of polymers.
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 parts that have been used in the past and are reused
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.
Sub-assembly:	Assembly consisting of at least two components that are joined together in a force- or positive-fit manner.
Chassis:	Parts with functions serving as a frame to support the main parts of machines.
Electrical/electronic sub-assembly:	Assembly which include at least one electronic or electric part.

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.

<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): 2000). 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: 2000) 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

4-1.Environmental certification criteria and certification procedures

4-1-1 resource conservation

<resource conservative design>

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

[Certification Procedure]

An applicant shall describe weight of a product main body in the Attached Certificate. The applicant shall also submit a copy of a corresponding page of an instruction manual, leaflet, home page, etc. indicating the weight of the product main body.

Table 1 Criteria for Weight of Product Main Body

Effective Flux (Brightness) x[lm]	Weight of Product Main Body [kg]
$x < 2500$	≤ 4
$2500 \leq x < 4000$	≤ 5
$x \geq 4000$	$\leq 0.003 \times x$ For products using 2 or more lamps as a light source, the following formula is applied $\leq 0.003 \times x \times 1.1$

- (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.

<long life design>

- (3) Supply of the spare parts shall be continued for five years after production of the copier stops.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of the users manual, leaflet and web page 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 web page 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 conform to Table 2.

[Certification Procedure]

An applicant shall describe the time for lamp replacement (standard hours to lead a proper lamp replacement) 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.

Table 2 criteria on time for lamp replacement (standard hours to lead a proper lamp replacement)

Effective Flux (Brightness) x [lm]	time for lamp replacement (hour) [h]
$x < 5000$	≥ 3000
$x \geq 5000$	≥ 2000

<Easily Recyclable Design>

- (6) The product shall have a design that enables disassembly for recycling. Specifically, the attached table 2 “checklist for 3R design” shall be satisfied.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, entry table 2 “checklist for 3R design” shall be submitted.

4-1-2 power consumption

- (7) Power consumption in use shall conform to the criteria in table 3.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, test results 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: 2008) or ISO/IEC17025 (corresponding JIS Q17025: 2005) shall also be indicated in the Attached Certificate.

Table 3 criteria on power consumption

Effective Flux (Brightness) x[lm]	Power consumption [W]	Reference Model
$x < 2500$	$\leq 0.085[\text{W/lm}] \times x[\text{lm}] + 80[\text{W}]$	2000lm:250W
$2500 \leq x < 3000$	$\leq 0.077[\text{W/lm}] \times x[\text{lm}] + 80[\text{W}]$	2500lm:272W
$3000 \leq x < 3500$	$\leq 0.070[\text{W/lm}] \times x[\text{lm}] + 80[\text{W}]$	3000lm:290W
$3500 \leq x < 4000$	$\leq 0.060[\text{W/lm}] \times x[\text{lm}] + 90[\text{W}]$	3500lm:300W
$4000 \leq x < 5000$	$\leq 0.060[\text{W/lm}] \times x[\text{lm}] + 110[\text{W}]$	4000lm:350W
$5000 \leq x < 6000$	$\leq 0.060[\text{W/lm}] \times x[\text{lm}] + 160[\text{W}]$	5000lm:460W
$x \geq 6000$	$\leq 0.060[\text{W/lm}] \times x[\text{lm}] + 220[\text{W}]$	6000lm:580W

Note that in the case of a wide projector, short focus projector or products using 2 or more lamps on the light source, 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 wide projector $\alpha:1.1$

A value to multiply for the short focus projector $\beta:1/\cos\theta$ (β shall be up to 1.3).

θ =Injection angle: Angle of a horizontal line passing through the center of a projector lens (mirror) and the center of a project screen

A value to multiply for products using 2 or more lamps on the light source $\gamma:1.5$

(Example) Conversion expression when brightness is $6000 \geq \text{lm}$ and functions of both a wide projector and short focus projector are equipped and using 2 lamp as a light source :

$$\leq 0.060[\text{W/lm}] \times x[\text{lm}] \times \alpha \times \beta \times \gamma + 220[\text{W}]$$

- (8) Standby power consumption shall be 0.50W 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.

4-1-3 harmful chemical substances

- (9) The content rate of lead/mercury/cadmium and its compounds/hexavalent chromium compounds in the product (including remote controller, cables) shall comply with ANNEX II (Table 4) of the amended RoHS Directive (2011/65/EU). However, this does not apply to those substances specified in ANNEX III.

In addition, flame retardants which consist of Polybrominated biphenyl (PBB), polybrominated diphenyl ether (PBDE) or chlorinated paraffin (having a chain of 10 to 13 carbon atoms and a chlorine concentration of 50% or more) are not added.

[Certification Procedure]

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

Table 4 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

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

- (10) Polymer containing halogen (fluorine, chlorine, bromine, iodine and astatine) shall not be used for plastic housing parts weighing over 25g. In addition, organohalogen compounds as flame retardants shall not be added as prescription constituents.

[Certification Procedure]

Compliance with this item 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.

- (11) Plastic housing parts weighing over 25g shall not contain, as prescription constituents, substances classified as category 1-3 of carcinogenic, mutagenic and toxic to

reproduction in accordance with Annex 1 of the EC Directive 67/548/EEC on the approximating laws, regulations, and administrative rules on classifications, packaging and labeling of hazardous substances in EU.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, entry table 3 “plastic material list used for plastic housing parts weighing over 25g shall be submitted.

- (12) Additives (colorant, etc) used for glass parts weighing over 100g 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 4 in 4-1-3(9) shall be met on the basis of a part.

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, Form 4 “material list used for glass parts weighing over 100g” shall be submitted

- (13) If a mercury lamp is used for a light source, information calling for attention to use of mercury and information on collection of the lamp or appropriate disposal method shall be provided. If the mercury lamps are sold to companies, there shall be a mechanism for collecting used mercury lamps or used projectors.

[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, home page, product label sticker and any explanatory material describing the mechanism for collection shall be submitted.

- (14) 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 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).

4-1-4 Information for users

(15) Information for users shown in a. to e. below shall be provided in an instruction manual, leaflet, home page, etc.:

- a. Information on whether an Eco mode is available
- b. Information on a rough standard of the time for lamp replacement (hours), lamp replacement and proper use that leads to longer life
- c. Information on maximum power consumption, standby power consumption
- d. Information on LCA result (type III environmental label, etc.) (In the case it is implemented)
- e. Information on disposal or recycling of product after use

[Certification Procedure]

Compliance with this item shall be indicated in the Attached Certificate. In addition, copies of the users manual, leaflet and web page 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) The noise emission at normal mode shall be measured in accordance with the method specified in ISO 7779 (corresponding JIS X 7779: 2001), and “Declared A-Weighted Sound Power Level, L_{pam} ” in accordance with ISO 9296 (corresponding JIS X 7778: 2001) shall satisfy Table 5.

Table 5 criteria on noise emission

Effective Flux (Brightness) x[lm] and Weight of Product Main Body [kg]	noise [dB]
x < 5000 and y < 2	≤ 42
x < 5000 and y > 2	≤ 37
x ≥ 5000	≤ 48

July 1,2010	Established (Version 1.0)
March 1, 2011	Revised (Version 1.1)
April 1, 2012	Revised 4-1-3(9) (Version 1.2)
January 1, 2013	Revised 4-1-2(8) (Version 1.3)
June 30,2022	Expiration date

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

Attached table 1 Packaging material checklist

It is determined that a product conforms to the criteria if the following requirements are all satisfied (“Yes”):

No.	Category	Requirement	Compliance
1	Resource saving	Is consideration given to weight reduction/volume reduction?	Yes /No
2		Is use of reused material considered? (Waste paper, recycled plastics, etc.)	Yes /No
3	Recycling	Is sharing of materials promoted?	Yes /No
4		Is selection of materials that can be recycled or reused more easily considered?	Yes /No
5		If different kinds of materials are used in combination, can the materials be easily separated?	Yes /No
6		Is material labeling according to the ordinances or JIS standards in place?	Yes /No
7		For materials to be used in packages, is use of chemical substances that have an effect on the environment avoided or reduced?	Yes /No

Attached table 2 3R design checklist (1/3)**Applicable Scope**

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

Sub assemblies	consist at least two components linked by power or design
Chassis	Parts with functions serving as a frame to support the main parts of machines
Housing parts	Parts which protect the machine from environmental effects and user from getting into contact with moving, radiating, or current-carrying components.
Electrical/ electronic sub-assemblies	Assemblies which include 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 “M” or “S”.

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

Reference specification

ECMA341(Environmental Design Considerations for ICT&CE Products) 3rd edition
June 2008, European Computer Manufacturer Association

Attached table 2 3R design checklist (2/3)

M- 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 sub-assemblies	Yes / 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 sub-assemblies 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	Yes / No		Facilitating parts search
	3	Disassembly for recycling can be done with universal tools exclusively	Housing, chassis, Electrical/ electronic sub-assemblies	Yes / 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 sub-assemblies	Yes / No		Facilitating disconnection
	5	Screwed connections between sub-assemblies can be separated with no more than 4 tools.	Housing parts, chassis, Electrical/ electronic sub-assemblies	Yes / 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	Yes / 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	Yes / No	This requirement does not apply to an LED lamp, laser lamp, etc.	Facilitating dismantling
	8	The manufacturer did a trial disassembly according to 1-7 above.	Entire unit	Yes / No		
Material Selection and Marking	9	Materials of plastic housing components weighing over 25g 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	Yes / No	For instance, "functions" refer to "heat resistance", "impact resistance" and "abrasion resistance".	Promoting reuse and recycling
	10	Plastic parts are marked in accordance with ISO11469:2000 (corresponding standard JIS K6999:2004). This requirement does not apply to parts <25g or <200mm ² (flat area)	Entire unit	Yes / No	Polymer blend (polymer alloy) may be used.	Promoting reuse and recycling

Attached table 2 3R design checklist (3/3)

S-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	Yes / 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	Yes / No	"The supporting surface" refers to the product surface for wrecking company to work on. This requirement enables to indirectly check whether or not there is hierarchical structure.	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	Yes / No	"Compatible dyeing" stands for different shades of one colour.	Promoting reuse and recycling
	4	The paints which shall not prevent recycling has been used.	Housing parts	Yes / No	"Paints not to prevent recycling" refers to the paints that have the following characteristics; it possesses compatibility with materials of coated parts, and does not prevent high-level material recycling (horizontal recycling for in-house products).	Promoting reuse and recycling
	5	Reused plastic parts or recycled plastic parts are used.	Housing parts, chassis	Yes / No	Reused or recycled plastics do not have to constitute the entire part of one component.	Promoting reuse and recycling