

## Eco Mark Product Category No.131

### “Products for Civil Engineering Version 1.19” Certification Criteria Category D. Concrete product

Japan Environment Association  
Eco Mark Office

#### 1. Purpose of Establishing Certification Criteria

In civil engineering/construction-related business that is implemented as part of social infrastructure development, ripple effects in the economy are expected, but at the same time a significant environmental load is imposed on the natural environment of the oceans, rivers and land as well as the living environment. New forms of civil engineering-/construction-related business based on the principles of the “Basic Environmental Law,” such as through harmonization with the natural environment, formation of a good living environment, prevention of global warming by improving energy efficiency, etc., are therefore being explored.

In addition to these kinds of environmental conservation efforts, it was also determined that in the civil engineering/construction-related business it is necessary to promote the control of waste generation (reduction), secondary uses (reuse) and recovery for further use (recycling) in accordance with the “Waste Disposal and Public Cleansing Law,” the “Basic Law for Establishing a Recycling-Based Society,” the “Law Concerning Promotion of the Procurement of Eco-friendly Goods and Services by the State and Other Entities (Green Procurement Law)” and the “Law for Recycling Materials for Construction (Construction Recycling Law).” Furthermore, independent efforts by civil engineering/construction enterprises for reduction of the environmental load, the “Guidelines for Green Procurement in the Construction Industry” were formulated in 2002.

In Japan’s material balance, the proportion attributable to civil engineering and construction-related business accounts for approximately 40% of new resources (2002 White Paper on a Recycling-Oriented Economic System; FY2001 Major Construction Materials Demand Forecast), approximately 20% of industrial wastes and approximately 40% of wastes collected at final landfill sites (2002 Environmental White Paper). It can therefore be expected that an environmentally-sound materials cycle to promote reduction, reuse and recycling will have a major impact on the structure of society.

The load placed on elements of the environment by the civil engineering and construction-related business varies according to many environmental factors such as the site of the business and the methods and types of materials used. As the environmental load may be reduced by applying Eco Mark Product Certification to construction materials, one of the factors affecting this, the Eco Mark Certification Criteria for newly applied products, shall be established to certify such materials as

‘construction products’ after organizing and integrating them with products that are already certified.

The new certification criteria, in addition to minimizing the consumption of new materials and the generation of wastes on the basis of using recycled materials, as has been recommended, and taking into consideration the reduced use of hazardous substances, energy saving, the impact on the ecosystem, etc., that are intended to reduce the environmental load imposed by construction work and long-term use, both of which may be characteristic of construction products, aim at the same time to achieve a symbiotic relationship with nature by creating a secondary natural environment. The concept of the life cycle of materials and products will be introduced into the evaluation, taking into consideration the life stage when the construction work is commenced as a construction product, and as many concrete environmental load items as possible have been selected.

## 2. Applicable Scope

JIS A5371 Precast plain concrete products, Category II

JIS A5372 Precast ferroconcrete products, Category I and Category II

JIS A5373 Precast prestressed concrete products

JIS A5409 Prefabricated ferroconcrete fence components

JIS A5412 Prestressed concrete double-T slabs

JIS A6511 Hollow prestressed concrete panels

## 3. Terminology

Terms for the common standard

Recycle	Materials recycling only; energy recovery (thermal recycling) is not included.
Recycled materials	Post-consumer materials or pre-consumer materials, or a combination of these. However, this product category shall include thinned wood, less useful wood, slag resulting from industrial activities, etc., in recycled materials.
Pre-consumer materials	Materials or rejected products generated from a disposal route in a product manufacturing process, excluding those that are recycled within the same process (plant).
Post-consumer material	Material or product which was disposed of after being used as a product
Standard mixture amount	The percentage of recycled materials of each material that is used to manufacture products (as % by mass), and calculated as follows and regulated on a material-by-material basis: Standard mixture amount = recycled materials/each material

#### 4. Certification Criteria and Certification Procedure

Any certification verifying conformity with the criteria shall be signed by the applicant and submitted.

##### 4-1. Environmental Criteria and Certification Procedure

- (1) 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 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 past five years from the date of application (whether there is any violation) must be reported. If there is any violation, proper remedies and preventive measures shall 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 relevant plant manager (entry or Attachment of a list of names of the Environmental Laws, etc.) must be submitted.

In addition, the applicants shall report whether there is any violation in the past 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 (clearly indicating a series of communication);
- b. Following materials (copies of recording documents, etc.) 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 (organization chart with roles, etc.);
  - 3) Bylaws stipulating retention of recording documents;
  - 4) Recurrence prevention measures (future preventive measures)
  - 5) State of implementation based on the recurrence prevention measures (check results of on-site inspection, etc. as compliance condition).

- (2) Concrete products shall conform to either a. or b. as follows.

- a. As for products using permeable concrete, the coefficient of permeability shall be:  $1 * 10^{-2}$  cm/sec or higher
- b. “Recycled material” shown in Table 1 must be used at more than the standard

mixture rate. The recycled material used shall be calculated by any of [1] total mass of recycled material to the product mass, [2] total mass of recycled material in aggregate to the total mass of aggregate, or [3] total mass of recycled material in cement and additives to the total mass of cement and additives.

**Table 1 Recycled materials usable for concrete products**

Recycled material	Standard mixture rate
<ul style="list-style-type: none"> <li>- Coarse aggregates in conformity with Category-C Certification Criteria 4-1-2.A.(2) for applicable 'aggregates'</li> <li>- Cement in conformity with Category-C Certification Criteria 4-1-2.B.(6) to (7) for the applicable 'cement'</li> <li>- Concrete admixture in conformity with Category C 4-1-2.C.(11) for the applicable 'concrete admixture'.</li> </ul>	$\frac{\text{Mass of recycled material in the product}}{\text{Mass of product}} \times 100 \geq 50$
<ul style="list-style-type: none"> <li>- Coarse aggregates in conformity with Category-C Certification Criteria 4-1-2.A.(2) for applicable 'aggregates'</li> </ul>	$\frac{\text{Total mass of recycled material in aggregate}}{\text{Mass of aggregate}} \times 100 \geq 50$
<ul style="list-style-type: none"> <li>- Cement in conformity with Category-C Certification Criteria 4-1-2.B.(6) to (7) for the applicable 'cement'</li> <li>- Concrete admixture in conformity with Category-C Certification Criteria 4-1-2.C.(11) for the applicable 'concrete admixture'.</li> </ul>	$\frac{\text{Total mass of recycled material in cement and additive}}{\text{Mass of cement + mass of additive}} \times 100 \geq 50$

[Certification Procedure].

- a., test results regarding the coefficient of permeability shall be submitted.
- b., A raw material certificate issued by the supplier shall be submitted. In addition, the types of recycled materials, the proportional content of recycled materials and materials other than recycled materials and control procedures shall be stated in the product weight certificate.

- (3) As for the elution of harmful substances, the product shall conform to the standards concerning elution of harmful substances that are set forth in Attached Table 3 of the enforcement regulation of the Soil Contamination Countermeasures Law (2002 Ministerial Order No. 29 of the Ministry of the Environment) with respect to cadmium, lead, hexavalent chromium, arsenic, mercury, selenium, boron and fluorine among the specified hazardous substances listed therein. However, this item shall not apply to metal portions such as steel products, etc. Slags may be tested by JIS K0058-1 "Test methods for chemicals in slags".

[Certification Procedure].

A certificate shall be submitted describing the results of tests carried out by an independent testing institution or public institution.

- (4) As for the content of harmful substances, the product shall conform to the

standards concerning content of harmful substances that are set forth in Attached Table 4 of the enforcement regulation of the Soil Contamination Countermeasures Law (2002 Ministerial Order No. 29 of the Ministry of the Environment) with respect to cadmium, lead, hexavalent chromium, arsenic, mercury, selenium, boron and fluorine among the specified hazardous substances listed therein. However, metal portions such as steel products, etc. may be confirmed by other test methods, etc. Slags may be tested by JIS K0058-2 “Test methods for chemicals in slags.

[Certification Procedure].

A certificate shall be submitted describing the results of tests carried out by an independent testing institution or public institution. With respect to metals, the content of hazardous substances may be proved by test results, ingredient table, etc. by manufacturers, and others.

- (5) An instruction manual shall accompany the product concerning its construction/use/maintenance/management/disassembly/disposal/recycling, and be given to the constructor and the owner of an architectural structure who use the relevant product. The instruction manual shall provide the following information:
- a. Information regarding 4-1.(2)-(4) (the usage of the permeable concrete or recycled materials and hazardous substances in the product) (clearly stating that details may be obtained upon inquiry)
  - b. Information regarding construction/use/maintenance/management of the architectural structure
  - c. Information regarding disassembly/disposal of the architectural structure
  - d. Information regarding the recycling of the product
  - e. The requirement to retain the instruction manual (The manual shall be kept until the architectural structure is disassembled, disposed of, and/or recycled.)

[Certification Procedure].

The instruction manual for the product shall be submitted (a draft is acceptable).

- (6) The products shall be recyclable after use, or they should be separable from other products.

[Certification Procedure].

The separation method and the recycling method after termination of the use shall be specifically stated in the Application Form for Certification and Use of the Eco Mark. (supplementary pictures, photographs, etc. are acceptable)

#### 4-2. Quality Criteria and Certification Procedure

- (7) Quality requirements for products, for which JIS, Minister of Land, Infrastructure and Transport’s certification, standards established by local government units, standards of industrial associations or other equivalent standards have been established, shall conform to the relevant standards. Other products, for which the JIS or the equivalent has established measuring methods for quality requirement

items, shall conform to the relevant similar JIS or its equivalent.

[Certification Procedure].

A certificate shall be submitted verifying conformity with the relevant quality standards.

- (8) Concrete products shall not be damaged by harmful cracks, etc.

[Certification Procedure].

For ferroconcrete products, a certificate shall be submitted verifying that the products conform to the “Guidelines for Research/Repair/Reinforcement of Concrete Cracks (Japan Concrete Institute)” and other equivalent standards and that damage from cracks, etc. is inspected. For plain concrete, a certificate shall be submitted verifying that damage from cracks, etc. is inspected.

- (9) Measures to control alkali-aggregate reaction shall be taken according to the “Alkali-Aggregate Reaction Control Guidelines” (Ministry of Land, Infrastructure and Transport, August 1, 2002).

[Certification Procedure].

A document shall be submitted describing control measures that have been applied and the test results as evidence.

- (10) In cases where the use of recycled aggregates for concrete in which the chloride ion content is controlled, particular attention shall be given to the chloride ion content in curing the cement paste using recycled aggregates.

[Certification Procedure].

As to whether the product is concrete in which chloride ion content is controlled shall be stated in the Application Form for Certification and Use of the Eco Mark. For products using concrete in which the chloride ion content is controlled, an explanatory document shall be submitted stating that particular attention is given to chloride ion content in curing the cement paste contained in recycled aggregates.

## 5. Product Classification, Labeling, etc.

- (1) The products shall be classified according to each applicable product in “2. Applicable Scope” Attached table 1 and brand of the product. No classification shall be made based on the size or the color of the product.
- (2) For any product that falls under the specific procurement item of “Laws Concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities” (Green Procurement Law), status of conformance to the judgment criteria shall be released on the web site of the Eco Mark Office.
- (3) In principle, Eco-Mark shall be indicated on the product main body.  
B type or C type display shall be conducted in accordance with the "Guide to Eco

Mark Usage" (<https://www.ecomark.jp/office/guideline/guide/>). Note that an Eco Mark licensee who owns the Eco Mark product may also indicate the type A. The applicant shall submit a location to indicate Eco Mark and content of the indication when applying for Eco Mark certification and its use.

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January 15, 2005	Established
February 23, 2005	Revised (4-1-3.L(75)、(76))
May 13, 2005	Revised (4-1-3. (35)、(94), 5-1-3.(73))
September 8, 2005	Revised (Terminology)
April 28, 2006	Revised
October 19, 2006	Revised
February 9, 2007	Revised
April 13, 2007	Revised
October 5, 2007	Extension of Expiration date
February 14, 2008	Extension of Expiration date
June 9, 2008	Revised
August 21, 2008	Revised
May 1, 2009	Revised
November 4, 2009	Revised
March 1, 2011	Revised (5.Indication, Version1.14)
June 15, 2012	Revised (4-1.(4),deletion of 5.(2)(3) Version1.15)
February 1, 2013	Revised (Version1.16)
February 1, 2014	Extension of Expiration date
December 1, 2014	Revised (Category F, Version1.17)
August 10, 2018	Revised (Category E-J, addition of 5.(2)(3), Version 1.19)
January 7, 2019	Extension of Expiration date
January 31, 2026	Expiration date



The Certification Criteria for the Product Category will be revised when necessary.

Attached table 2 -- Omitted --



Attached table 3 -- Omitted --

## Attached table 4 Eco Mark indication


[Example]

B type display	Condition of indication
 <p>エコマーク商品      ...1) 再生材料を使用〇% } ...2) 粗骨材、セメント } 12345678(または〇〇〇株式会社) ...3)</p> <p>Not to require the numbers 1), 2) and 3) themselves.</p>	<p>1-2(1) "Certification information" of "Guide to Eco Mark Usage" shall include (1)-(3) below.</p> <p>1) The wording of "Eco Mark" or any expression of Eco Mark products stipulated in Section 1-6 in the "Guide to Eco Mark Usage"</p> <p>2) The wording indication of environmental information</p> <p>3) The Eco Mark certification number or the name of the Eco Mark Usage Licensee (The indication of the both is acceptable)</p>
C type display	Condition of indication
 <p>エコマーク認定 12345678</p>	<p>This is a sample.</p> <p>Conduct a proper indication by referring samples in 1-3 of the "Guide to Eco Mark Usage".</p> <p>Please make an Eco Mark product information page on the website which includes the certification information in order for customers to refer the certification information,</p>

[indication by an applicable product]

Applicable product	Environmental information	B type display
Permeable concretes within concrete products	Permeable concretes  *Only for the product to choose "a." in Certification Criteria (2)	 <p>エコマーク商品      ...1) 透水性コンクリート    ...2) 12345678(または〇〇〇株式会社) ...3)</p>
Applicable products using recycled materials other than the above  --- Pattern 1 When a denominator for calculating the recycled material	Recycle materials used X%, aggregates, cement or Recycle materials used X% or more, aggregates, cement  * The name of the recycled materials used shall be described and the proportional content in X (round off decimal numbers to	 <p>エコマーク商品      ...1) 再生材料を使用〇% } ...2) 粗骨材、セメント } 12345678(または〇〇〇株式会社) ...3)</p>



Applicable product	Environmental information	B type display
mixture ratio covers the entire product	integers). * If using multiple types of recycled materials, the top two types in descending order of their proportional content shall be stated, and the total proportional content of recycled materials shall be stated in X (round off decimal numbers to integers). * When products within the same product category have a different proportional content of the relevant recycled materials, the lowest value within the same product category shall be stated.	
--- Pattern 2 When a denominator for calculating the recycled material mixture ratio covers a material category defined in the certification criteria	Recycle materials used X% in YY or Recycle materials used X% or more in YY  *For YY, indicate a name of a material category that is used as a denominator when the mixture rate is calculated. * For X, indicate the weight percentage of the used recycled materials (round off decimal numbers to integers). *: When products within the same product category have a different proportional content of the relevant recycled materials, the lowest value within the same product category shall be stated.	 <p>             エコマーク商品 ……1)              △△中に再生材料を使用○%……2)              12345678(または○○○株式会社)              ……3)           </p>