

**Eco Mark Product Category No.131****“Products for Civil Engineering Version 1.21” Certification Criteria****Category C. Concrete materials**

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

### Aggregates

Molten slag aggregate: JIS A 5031: Melt-solidified slag aggregate for concrete derived from municipal solid waste and sewage sludge

Slag aggregates: JIS A5011-1: Blast furnace slag aggregates, JIS A5011-2: Ferro-nickel slag aggregates, JIS A5011-3: Copper slag aggregates, JIS A5011-4: Electric furnace oxidation slag aggregates

Recycled aggregates: JIS A 5021 Recycled aggregates, JIS A 5022 Appendix, Recycled aggregates, JIS A 5023 Appendix, Recycled aggregates

Lightweight aggregate: Glass aggregate, JIS A5002 Lightweight aggregate for structural concrete, Expanded aggregate

### Cement

JIS R5210: Portland cement, JIS R5211: Portland Blast Furnace Slag Cement, JIS R5213: Portland Fly Ash Cement, JIS R5214: Eco-cement

### Admixture

JIS A 6206 Powder dust of blast furnace slag, JIS A 6201 Fly ash, JIS A 6207 Silica fume

## 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
Coarse aggregates	Aggregates of which 85% or more remain after passing through a 5 mm mesh sieve.
Fine aggregates	Aggregates that completely pass through a 10 mm mesh sieve and 85% or more of which pass through a 5 mm mesh sieve.

#### 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

###### 4-1-1. Common 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. (Entry example 3)

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).

#### 4-1-2. Individual product criteria and certificate procedure

##### A. Aggregates

- (2) The percentage of recycled aggregates produced from crushed chunks of concrete from demolished concrete architectural structures shall be 100% by mass of the entire product mass. The percentage of molten slag aggregate such as non-industrial wastes and sewage sludge shall be 100% by mass of the entire product mass. The percentage of slag aggregates, the respective blast furnace slag, ferro-nickel slag and copper slag and electric furnace oxidizing slag shall be 100% by mass of the entire product mass. For glass aggregate, the percentage of glass cullet shall be 100% by mass of the entire product mass. For lightweight aggregate, the total mass of glass cullet, coal ash, inorganic sludge (alumina and silica) incineration ash, and wastewater sludge incineration ash shall be 60 % or more by mass of the entire product mass. However, for products in which glass cullet only is used for recycled material, the percentage of glass cullet may be 60% or more by mass of the entire product mass.

##### [Certification Procedure]

A raw materials certificate issued by the supplier shall be attached. 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) The production stage of the product shall give consideration to the quantity of new resources used, energy consumption and CO<sub>2</sub> emissions.

##### [Certification Procedure]

A document shall be submitted stating the quantity of new resources used, energy consumption and CO<sub>2</sub> emissions per ton of the aggregate in the production process.

- (4) 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 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, test may be conducted by JIS K0058-1 “Test methods for chemicals in slags”. In addition, during the accreditation period, the test shall be conducted twice a year and the test results shall be able to be disclosed.

## [Certification Procedure]

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

- (5) 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 5 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, test may be conducted by JIS K0058-2 “Test methods for chemicals in slags”. In addition, during the accreditation period, the test shall be conducted once a year and the test results shall be able to be disclosed.

## [Certification Procedure]

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

## B. Cement

- (6) The products shall use recycled materials that are defined above, and contain the materials listed in Table 1.

The Product that is made of gypsum board recycled from the waste generated in connection with building demolition shall be made free of products that are known to have contained asbestos, arsenic, or cadmium through the process of sorting and removal. On the subject of specific waste gypsum boards to be eliminated, the Applicant should refer to “On the Inclusion of Asbestos in Gypsum Boards) published by the Gypsum Board Industry Association, “Proper Handling of Hazardous Substances and the Like Associated with Building Demolition and the Like” published by the Construction By-products Recycling Promotion Conference, and other pertinent documents.

No analysis shall be required if the Product is made of gypsum board that is recycled from the waste coming out of the manufacturing process of gypsum board processing plants or generated at a new building construction site, because the recycled material does not contain asbestos.

## [Certification Procedure]

For the used recycled materials, a raw materials certificate issued by the supplier shall be attached.

The Product that is made of gypsum board recycled, applicants shall enter the conforming condition to this item in the attached certificate. In the event that products which have turned out to have contained asbestos, arsenic, and/or cadmium are separated and removed, applicants must report the specific separation and removal methods. Incidentally, in the case of judgment by analytical examinations, applicants must determine that more than 0.1% of six types of asbestos including Tremolite are not contained by the methods that conform to “JIS A1481: Determination of asbestos in building material

products” (2008) shown in the Instruction Letter No. 0821002 of the Labour Standards Bureau of the Ministry of Health, Labour and Welfare dated August 21, 2006 “On the Analysis Method of Asbestos Content in Building Materials.”

- (7) Raw materials (including fuels and mixing materials) used in the process of producing 1 ton of the product shall contain 0.4 ton or more of the above-mentioned recycled materials in total. As for recycled materials containing moisture, including sludge, the raw materials shall be calculated using mass values when received. Eco-cement shall include 0.5 ton or more (in dry weight) of the waste, such as municipal-waste incineration ash, per 1 ton of the product.

**Table 1 Recycled materials usable for making cement**

Recycled materials
Blast furnace slag
Coal ash
By-product lime
Sludge
Non-steel slag
Steelmaking slag
Combustion residues (excluding coal ash), soot, dust
Coal refuse
Foundry sand
Waste tires
Recycled oil
Waste oils
Waste clay
Waste plastics
Wood chips
RDF
RPF
Other non-industrial wastes and industrial wastes designated under the “Law Concerning Waste Disposal and Cleansing,” shall be appropriate as cement constituents, fuels or mixing materials

**[Certification Procedure]**

The total mass of materials per ton of the product that are used during the production process, and 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.

- (8) Any production process that includes heat treatment, such as baking, shall give consideration to CO<sub>2</sub> emissions.

**[Certification Procedure]**

The average CO<sub>2</sub> emissions per ton of the product in the production process shall be presented in comparison with cases in which recycled materials are not used (excluding emissions in the pretreatment process of the raw materials; the parts for comparison may be limited to those that are different from cases in which

natural raw materials are used).

- (9) 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 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.

[Certification Procedure]

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

- (10) 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 5 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.

[Certification Procedure]

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

#### C. Concrete admixture

- (11) Regarding powder dust of blast furnace slag, it shall contain 100% of blast furnace slag as raw material. However, gypsum can be added within the scope of standards of Japan Society of Civil Engineers.

As for fly ash, it shall contain 100% of fly ash as raw material.

As for silica fume, it shall contain 100% of silicon dioxide, which are the by-products of silicon production.

[Certification Procedure]

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.

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

- (12) Blast furnace slag aggregates, ferro-nickel slag aggregates and copper slag aggregates shall conform to the respective JIS.

Molten slag aggregate shall meet JIS A 5031 “Melt-solidified slag aggregate for concrete derived from municipal solid waste and sewage sludge”

Recycled aggregates shall conform to JIS A 5021 “Recycled aggregate for concrete-class H”, JIS A 5022 “Concrete using recycled aggregate class M” Appendix, JIS A 5023 “Concrete using recycled aggregate class L” Appendix, etc.

Lightweight aggregate shall conform to JIS A 5002 “Lightweight aggregates for

structural concrete.” However, products which have glass cullet only used for recycled material shall conform to the in-house standard pursuant to JIS A 5002. Or products shall be certified by Minister of Land, Infrastructure and Transportation.

Glass aggregate shall conform to the in-house standard pursuant to JIS A 5002 “Lightweight aggregates for structural concrete.”

[Certification Procedure]

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

- (13) As for cement, quality requirements for products shall conform to the respective standard of JIS A5210 “Portland Cement,” JIS A 5211 “Portland Blast-Furnace Slag Cement,” JIS A 5213 “Portland Fly-Ash Cement,” or JIS R 5214 “Eco-Cement”.

[Certification Procedure]

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

- (14) As for concrete admixture, quality requirements for products shall conform to the respective standard of JIS A6206 “Powder dust of blast furnace slag”, JIS A6201 “Fly ash cement”, or JIS A 6207 “Silica fume”.

[Certification Procedure]

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

## 5. Product Classification, Indication and Others

- (1) The products shall be classified according to each applicable product in “2. Applicable Scope” (Attached table 1) and brand of the product. The product is not classified by size or color.
- (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, Eco Mark shown as below shall be indicated on the product main body. 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”
- \* In accordance with “Environmental Labeling Guidelines” of the Ministry of the Environment of Japan, etc., the environmental claims of certified products may be indicated in association with Eco Mark..  
(<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/>)

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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
April 1, 2022	Revised (Category E ,J: Version 1.20)
February 1, 2023	Revised (Version1.21)
March 15, 2024	Extension of Expiration date
January 31, 2031	Expiration date

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

**Attached table 2** -- Omitted --

**Attached table 3** -- Omitted --