

EL248. Finishing Materials for Wall or Ceiling [EL248-2003/3/2008-213]



1. Scope

This criteria shall apply to wall and ceiling finishing materials (hereinafter referred to as “finishing materials”) for indoor use, and which are pressed and produced by using plastics, woods, metal, inorganic materials, or cellulose materials.

2. Definitions

2.1

“Finishing materials” are molding products used to finish indoor walls or ceilings or basic materials used to conduct finishing using wall paper/paint, and in this standard, they shall be classified according to the main raw materials or surface materials used, as follows:

Item	Plastic finishing materials	Metal finishing materials	Wood finishing materials	Inorganic finishing materials	Fibrous finishing materials	Cellulose Finishing materials
Main materials or surface materials	Plastics	Metals	Material lumber, plywood, woody materials	Inorganic materials	Textile, non-woven fabric	Papers, natural-fibers

Note) Main raw materials shall be determined with a structure of materials ‘50% or above 50% of the total weight’ or ‘70% or above 70% of the total volume’ in proportion. When classifying flooring materials depending on surface materials, general classifications according to main structure materials or the characteristics of the surface shall be applied. If not approved by the Environment Mark Certification Deliberation Committee, however, such specification shall not be applied.

2.2

“Volatile organic compounds (VOCs)” refers to the liquid or solid organic compounds that are consecutively volatilized by certain temperature and pressure in the air.

2.3

“Wood waste” refers to the wood waste as stipulated in “Wood waste classification and recycling standard” in accordance with the enforcement regulations of the Waste Management Law.

2.4

“Fibrous wastes of herbaceous plants” is the cellulose raw material obtained from herbaceous plants, such as the byproduct of the green land (reed, silver grass, etc.), or product production and processing (chaff, residuals of bamboo, etc.).

2.5

“Bulk density” refers to the value representing volume including open pores divided into mass.

2.6

“Ozone Depletion Potential (ODP)” refers to the value expressing the relative effect of a substance on the ozone layer when CFC-11 is represented as 1.

2.7

“Global Warming Potential (GWP)” refers to the value expressing the relative effect of a substance on global warming when CO₂ is represented as 1. Note) In this criteria, the GWP for a duration of 100 years as outlined in the Fourth Assessment Report: Climate Change (2007) of the IPCC (Intergovernmental Panel on Climate Change) shall be applied.

2.8

“Activity Concentration Index (I)” refers to the value expressing the actual effect density calculated from the radiant energy of C_{Ra}, C_{Th}, and C_K of product.

Note) “C_{Ra}, C_{Th}, C_K” refers to the activity concentration of radium-226, thorium-232, and potassium-40, respectively.

2.9

“Volatile Organic Compounds (VOCs)” refer to liquid or solid organic compounds continuously volatilized by certain temperature and pressure levels in the air.

2.10

“Volatile organic compounds emissions (VOCs emissions)” refers to the quantity of the VOC (Volatile Organic Compounds) per unit hour that is discharged to the outside while the product is running under the defined conditions.

Note: This standard tentatively defines them as VOCs from n-hexane to n-hexadecane on the chromatogram, which is created by the gas chromatograph equipped with the mass spectrometer

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

With respect to resource consumption during the manufacturing process, the following criteria shall be adhered to:

3.1.1.1

With respect to resource consumption during the manufacturing process, the following criteria:

- a) Natural stones produced by rubbing or simple processing after being mined shall not be used.
- b) The rate of waste usage shall conform to the following criteria depending on the types of waste. However, finishing materials mainly made of clay and cement shall be excluded.

Type of waste	Usage of Waste [Weight%]
Waste lime, Waste gypsum	≥ 50
Incineration residue, waste glass, waste castings, waste ceramics, slag, stone powder, others	≥ 40
Inorganic sludge	≥ 10

Note) When two or more types of waste are mixed, the whole rate of waste usage shall conform to the criteria for the rate of waste usage of main materials.

3.1.1.2

Wood finishing materials shall conform to the following criteria:

a) With respect to finishing materials mainly made of material lumber, they shall be certified by a third person in terms of the use of sustainable forest resources or wood produced according to the control criteria for sustainable forest resources of the forestry principles in UNCED shall be used by a degree of 70% or above 70%.

b) With respect to finishing materials mainly made of veneer boards, they shall be those that have been certified by the third person on the use of sustainable forestry resources, or wood produced according to the control criteria for sustainable forest resources of the forestry principles in UNCED shall be used by a degree of 30% or above 30%.

c) The usage of waste wood according to wood materials of finishing materials shall conform to the following criteria. When a wood material has been produced by using sustainable forest resources to a degree of 100%, however, such a case shall be considered as conforming to the criteria.

Item	Particle board	Fiberboard	Other forming materials
Percentage of used waste wood [weight %]	≥ 70	≥ 30	≥ 70

3.1.1.3

The rate of use of metal finishing materials shall be 70% or above 70% in weight. If the bulk density of a finishing material is 60% or below 60% of the weight compared to the true density of metal materials, these criteria shall not be applied. 3.1.1.4

The rate of use cellulose finishing materials shall be 60% or above 60% in weight.

3.1.2

With respect to the use of chemical materials and the emission of materials harmful to the ozone layer in the manufacturing process, the following criteria shall be adhered to:

3.1.2.1

Plastic and fibrous finishing materials shall conform to the following criteria:

a) Organotin compounds (TBT, TPT), lead compounds, and cadmium compounds shall not be used as additives for resin used in the product.

b) Lead (Pb), cadmium (Cd), and mercury (Hg) contained in a product shall conform to the following criteria:

Item	Lead (Pb)	Cadmium (Cd)	Mercury (Hg)
Criteria [mg/kg]	≤ 50	≤ 0.5	≤ 0.5

3.1.2.2

When using flame retardant for flooring materials, polybrominated biphenyls (PBBs), polybrominated diphenylethers (PBDEs), and short-chain chlorinated paraffins (C=10-13) of a 50% or above 50% chlorine density shall not be used.

3.1.2.3

When a foaming material is used as a finishing material, a material with 0 ODP and 3000 or below 3000 GWP shall be used as the foaming agent.

3.1.3

With respect to the emission of hazardous substances in the usage and discard stages, the following criteria shall be adhered to:

3.1.3.1

Asbestos shall not be used as a finishing material.

3.1.3.2

With respect to finishing materials made of specified waste material, hazardous ingredients including heavy metals shall conform to the criteria shown in the following table. With respect to plastic products, however, hexavalent chrome, cyanogen, organophosphate, trichloroethylene, tetrachloroethylene shall be excluded.

Item	Criteria [mg/L]	Item	Criteria [mg/L]
Cadmium (Cd)	< 0.3	Hexavalent chromium (Cr ⁶⁺)	< 1.5

Lead (Pb)	< 3	Cyanogen (CN)	< 1
Copper (Cu)	< 3	Organophosphate	< 1
Arsenic (As)	< 1.5	Trichloroethylene	< 0.3
Mercury (Hg)	< 0.005	Tetrachloroethylene	< 0.1

3.1.3.3

Lead and cadmium of inorganic finishing material with glazing on the surface shall conform to the following criteria:

Item	Lead (Pb)	Cadmium (Cd)
Criteria [mg/m ³]	≤ 80	≤ 7

3.1.4

With respect to the emission of hazardous substances during the usage stage, the following criteria shall be adhered to:

3.1.4.1

With respect to radiant substances contained in inorganic finishing materials, the Activity Concentration Index (I) into which C_{Ra} , C_{Th} , and C_K have been converted according to the following formula shall be 1.0 or below 1.0:

$$\text{Activity Concentration Index (I)} = \frac{C_{Ra}}{300} + \frac{C_{Th}}{200} + \frac{C_K}{3000}$$

3.1.4.2

The emission quantity of VOCs of finishing materials after 7 days shall be less than 0.40 mg/m³. h and the emission quantity of toluene shall be less than 0.080 mg/m³. h. However, when conforming to the criteria can be sufficiently proven since a source of emitted VOCs and toluene rarely exists under natural component materials of a finishing material, the item can be excluded after a review of the Environment Mark Certification Deliberation Committee.

3.1.4.3

With respect to the emission quantity of formaldehyde of a finishing material, the following criteria shall be conformed to. However, when such conformity to the criteria can be sufficiently proven since a source of emitted formaldehyde rarely exists under natural component materials of a finishing material, the item can be excluded after a review of the Environment Mark Certification Deliberation Committee.

a) The emission quantity of formaldehyde shall be less than 0.5 mg/L.

b) The emission quantity of formaldehyde after 7days shall be less than 0.120 mg/m³. h.

3.1.4.4

When using plastic sheets to decorate the surface of a finishing material, the following criteria shall be conformed. When those have been certified under Environmental Mark Certification (EL252: Plastic sheets for decoration) are used, it can be considered that the product conforms to the criteria.

a) With respect to a product made of halogen-based plastic sheets, such as PVC, it shall have a 1 mg/kg or below 1 mg/kg vinyl chloride monomer content.

b) As a plasticizer for resin, phthalate-based plasticizers with a boiling point of di-(2-ethylhexyl) phthalate (DEHP) or less shall not be used.

3.1.4.5

When there is paint on the surface of a finishing material, with respect to hazardous elements of paint, the following criteria shall be adhered to:

a) Paint to have been certified under Environmental Mark Certification ('EL241. Paint') shall be used and the sum of the lead (Pb), cadmium (Cd), mercury (Hg), and hexavalent chrome (Cr⁶⁺) contained in the paint shall be 0.1% or below 0.1% of its weight {1000 mg/kg}.

b) Hazardous elements of non-volatile matter of the used paint shall conform to the following criteria:

Item	Pb	As	Cd	Sb	Ba	Cr	Hg	Se
Criteria [mg/kg]	≤ 90	≤ 25	≤ 75	≤ 60	≤ 500	≤ 60	≤ 60	≤ 500

3.1.5

There are criteria related to insulation or acoustic absorption performance in Korean Industrial Standards (KS). Any finishing material with such performance levels indicated shall conform to the criteria for insulation or acoustic absorption performance in the corresponding KS.

3.2 Quality Criteria

3.2.1

If Korean Industrial Standards are available as a national standard of the product in question, it should satisfy the quality or performance criteria of the standard in question. However, items related to "3.1 Environmental Criteria" are excluded.

3.2.2

If no Korean Industrial Standards are available as a national standard of the product in question, it should satisfy the quality and performance criteria according to the following sequence. However, the items related to "3.1 Environmental Criteria" are excluded. Also, if the E-Mark Certification Criteria Setting Committee determines that the applying criteria are not reasonable considering the characteristic of the product, it should satisfy the standards that were modified by the committee (test item, test method, standards, etc.).

3.2.2.1 National standards other than Korean Industrial Standards.

3.2.2.2 Overseas national standards or international standards regarding the product quality in question.

3.2.2.3 Standards of the organizations at home and abroad that are referred by the current E-mark target product and certification standard.

3.2.2.4 A private standard that is recognized as higher than the national standard in the industry of the product in question.

3.3 Consumer information

Indication on the items that the product contributes to the reasons for certification (available resource recycling, reduction of harmful substances, insulating-sound-absorbing) during its consumption stage

4. Test Methods

Certification Criteria			Test method and verification method	
Environmental Criteria	3.1.1		Verification of submitted documents	
	3.1.2	3.1.2.1	a)	Verification of submitted documents
			b)	Authorized test institution test reports pursuant to the test methods of KS M 0016 (general rules for atomic absorption spectrochemical analysis) and KS M 0032 (general rules for ICP emission spectrochemical analysis)
		3.1.2.2 ~ 3.1.2.3		Verification of submitted documents
	3.1.3	3.1.3.1		Verification of submitted documents
		3.1.3.2		Authorized test institution test reports pursuant to the Waste Process Test Methods (heavy metal elution test)
		3.1.3.3		Authorized test institution test reports pursuant to the test methods of ISO 10545-15 (Ceramic tiles – Part 15: Determination of lead and cadmium given off by glazed tiles)
		3.1.4.1		Authorized test institution test reports pursuant to '(1) and (2)' test methods

		3.1.4.2	Authorized test institution test reports pursuant to the following test methods or equivalent <ul style="list-style-type: none"> · Indoor air quality process test methods (Test methods for pollutant emission construction materials) · KS M ISO 16000-9 (Indoor air – Part 9: Determination of the emission of volatile organic compounds – Emission test chamber method) and KS ISO 16000-6 (Indoor air – Part 6: Determination of volatile organic compounds in indoor and chamber air by active sampling of TENAX TA sorbent, thermal desorption, and gas chromatography using MSD/FID)
		3.1.4.3	a) Authorized test institution test reports pursuant to KS F 3104 (Particle board), KS F 3200 (Fiberboard)
			b) Authorized test institution test reports pursuant to the following test methods or equivalent <ul style="list-style-type: none"> · Indoor air quality process test methods (Test methods for pollutant emission construction) · KS M ISO 16000-9 (Indoor air – Part 9: Determination of the emission of volatile organic compounds – Emission test chamber method) and KS ISO 16000-3 (Indoor air – Part 3: Determination of formaldehyde and other carbonyl compounds – sampling method)
		3.1.4.4	a) Authorized test institution test reports pursuant to the test methods of KS M 0031 (general rules for gas chromatographic analysis)
			b) Verification of submitted documents

		3.1.4.5	<p>The test results of the officially recognized agency according to the following test method.</p> <ul style="list-style-type: none"> ▪ Pb : KS M ISO 3856-1 (Paints and varnishes - Determination of “soluble” metal content - Part 1: Determination of lead content - Flame atomic absorption spectrometric method and dithizone spectrophotometry) ▪ Cd : KS M ISO 3856-4 (Paints and varnishes - Determination of “soluble” metal content - Part 4: Determination of cadmium content - Flame atomic absorption spectrometric method and electrolytic reaction analysis) ▪ Cr⁶⁺ : KS M ISO 3856-5 (Paints and varnishes - Determination of “soluble” metal content: Determination of hexavalent chromium content of the liquid paint or the paint in powder – Diphenylcarbazide) ▪ Hg : KS M ISO 3856-7 (Paints and varnishes - Determination of “soluble” metal content - Part 7: Determination of mercury content of the pigment portion of the paint and of the varnish portion of the paint - Non-flame atomic absorption spectrometric method)
			b)
		3.1.5	Authorized test institution test reports pursuant to KS G ISO 8124-3 (Safety of toys - Part 3: Migration of certain element) or submitted documents that can prove the test reports
			Verification of submitted documents
	Quality Criteria		Authorized test institution test reports pursuant to the following test methods the corresponding standard or certificates for the same or higher criteria
	Consumer Information		Verification of submitted documents

4.1 General Matters

4.1.1

Make it a principle to take one test sample per product under application. Where one or more test samples are required, however, this shall not be applicable.

4.1.2

Environmental labeling certification institutions shall conduct random sampling of test samples among the products commercially available or kept in production locations. Note that the sampling methods used to verify (E) 2) and 3) of the Environmental criteria shall adhere to KS

M ISO 16000-11 (Indoor air - Part 11: Characteristics of emission of volatile organic compounds - sampling, storage, and production of test pieces).

4.1.3

Test result shall be numerically set according to KS Q 5002 (Statistical interpretation method of the data – Part 1: Statistical description of the data).

4.2 Measurement methods for activity concentration (C_{Ra} , C_{Th} , C_K)

4.2.1

When that is made of a single material, however, the whole product shall be pulverized and then a 500 g sample thereof shall be prepared as a test sample.

4.2.2

A prepared test sample shall be sealed in a PTFE (polytetrafluoro ethylene) container. The sealing period before measuring activity concentration shall be 30 ± 5 days to ensure the radiation balance of the measured sample.

4.2.3

The activity concentration shall be measured according to IEC 61452 (Nuclear instrumentation - Measurement of gamma-ray emission rates of radionuclide - Calibration and use of germanium spectrometers) or equivalent test methods. Note) When test methods other than those specified in IEC 61452 are applied, whether the application there of is appropriate or not shall be determined by a review of the Environment Mark Certification Deliberation Committee.

5. Reasons for Certification

“Less harmful substances, Less indoor air pollution, Recycling of available resources(confined to applicable products), Insulation·Sound absorption (confined to applicable products)”

Common Criteria, Notice No. 2012-36, the Ministry of Environment

1. Eco-label products must follow the following provisions with regard to the proper treatment of environmental pollution substances, such as air and water wastes and noxious chemical substances emitted in the process of manufacturing or service operation.

A. When first applying for certification, the product manufacturer should observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located for a period of one year prior to the date of application. Any case of violation of the penalty clause will be verified by confirming documents involved during a period of one year to the date of application. Regarding any violation not related to the penalty clause, confirmation will be made on the completion of appropriate measures.

B. A person who has received a certification of eco-labeling shall observe the environment related laws and agreements pertaining to the region where the production factory or the place of service operation is located during the period of certification. However, regarding any violation besides a penalty, confirmation will be made on the completion of appropriate measures.

2. As a general rule, information for consumers shall be indicated on the surface of the product in such a way not to be easily erased. However, in case that indication on the surface of the product is impossible or undesirable, it can be indicated on the appropriate part such as product packaging, product guidebook and user's manual that consumers can recognize. However, the service information should be indicated inside and outside of the place of service operation. In case that indication inside and outside of the place of service operation is impossible or undesirable, it can be indicated on the appropriate part such as an agreement, letter of delivery, letter of guarantee, and PR materials that consumers can recognize.

3. In order to establish fair trade and to protect consumer, the applicant for eco-label and the holder of eco-label license shall observe the Act on the Fairness of

Indication and Advertisement with respect to the environmental aspects of the product.

4. For Various standards referred in the certification criteria by target product, the latest revised edition applies at the date of application, if not specified otherwise.

5. In applying the quality related criteria for each target product, if no standard is available that can be applied as the quality criteria, the president of Korea Environmental Industry & Technology Institute (KEITI) (hereafter referred to as "president of KEITI") may establish and operate the quality criteria for the product involved after review by a competent committee.