

EL246. Indoor Floor Coverings

[EL246-2003/7/2013-132]



1. Scope

The criteria shall apply to the indoor floor coverings (hereafter referred to as "floorings") processed with synthetic resin, woods, synthetic rubbers, or inorganic materials.

2. Definitions

2.1

"Floorings" refers to the finishing materials which are constructed on the slab of indoor floor in a building for a beautiful sight and convenience of walking. It shall be classified by the main materials or surface materials in the criteria as follows.

Item	Synthetic resin flooring	Rubber flooring	Woods flooring	Inorganic flooring	Fiber flooring
Main or surface materials	Synthetic resin	Synthetic rubber	Material lumber, veneer board, woody materials	Inorganic materials	Woven stuff, nonwoven

Note1) The main materials shall occupy more than '50 weight%' or '70 volume%' out of constituent materials of floorings. When the floorings are classified by the surface materials, it shall be classified by the main materials or the characteristics in general. However, the general classification shall not be applied in case the eco-label deliberation commission doesn't recognize.

Note2) Products made by mixing two or more materials that meet the main material criteria in Note 1) shall meet the environmental criteria for each material.

2.2

"Woods materials" refers to the materials molded with waste woods including improved woods, fiber boards, and laminated woods etc.

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

“Ozone depletion potential (ODP)” refers to the value which indicates the relative effects of greenhouse gases when the effect of CFC-11 is set 1.

2.6

“Global warming potential (GWP)” refers to the value which indicates the relative effects of greenhouse gases when the effect of CO₂ is set 1.

Note) GWP of a 100-year duration shall be applied in accordance with Fourth Assessment Report: Climate Change(2007) of IPCC(Intergovernmental Panel on Climate Change) in the criteria.

2.7

“Activity concentration index (I)” refers to the value of actual influence concentration calculated from the radiant energy of C_{Ra}, C_{Th}, C_K in a product.

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

2.8

“Volatile organic compounds (VOCs)” refers to the liquefied or solid organic compounds continuously volatilized by the certain temperature and pressure in the air.

2.9

“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

2.10

“Nitrosamine (N-nitrosamines)” refers to the following amino compounds containing substances of nitro group(-NO).

CAS No.	Name
55-18-5	N-nitrosodiethylamine (NDEA)
59-89-2	N-nitrosomorpholine (NMOR)
62-75-9	N-nitrosodimethylamine (NDMA)
100-75-4	N-nitrosopiperidine (NPIP)
621-64-7	N-nitrosodipropylamine (NDPA)
924-16-3	N-nitrosodibutylamine (NDBA)
930-55-2	N-nitrosopyrrolidine (NPYR)
-	N-nitroso N-methyl N-phenylamine (NMPHA)
-	N-nitroso N-ethyl N-phenylamine (NEPHA)

2.11

“Phthalate plasticizer” is a plasticizer used to provide flexibility to synthetic resins, such as polyvinyl chloride resins (PVCs), or used as a solvent for liquid chemical products. It is a compound classified as 1,2-benzenedicarboxylic acid.

2.12

“Post consumer waste materials” refers to material produced after going through the normal circulation stage as a product and completing the purpose of its use.

3. Certification criteria

3.1 Environmental criteria

3.1.1

With respect to the resource consumption in the manufacturing stage, it shall be suited to the following criteria.

3.1.1.1

With respect to wood flooring materials mainly made of material lumber, they shall be certified by the 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 at least a degree of 70 % or above 70 %.

3.1.1.2

The usage of waste wood according to wood materials of wood flooring 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	Fiber board	Others
The amount of used waste wood [weight%]	≥ 70	≥ 30	≥ 70

3.1.1.3

Inorganic flooring materials shall conform to the following criteria:

- a) Natural stones that are grinded or simply produced after being mined shall not be used.
- b) Polyester resins used as composing materials of a product shall be 10% or less than 10% of the weight.

3.1.2

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

3.1.2.1

The sum of lead (Pb), cadmium (Cd), mercury (Hg) and chromium 6 (Cr⁶⁺) in finishing material used for decoration of wood flooring surface shall be less than 0.1 weight% {1000 mg / kg}. However, lead (Pb) shall not be higher than 0.06 weight% {600 mg/kg}.

3.1.2.2

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

- a) Organotin compounds (TBT, TPT), lead compounds, and cadmium compounds shall not be used as a resin additive used in a product.
- b) Lead (Pb), cadmium (Cd), and mercury (Hg) contained in a product shall conform to the following criteria. In the case of a product using waste wood for 8 % or above 8 % of the weight, however, the criteria shall not be applied.

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

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

3.1.2.3

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.

3.1.2.4

When a foaming material is used as a flooring 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 harmful 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 raw material for flooring materials.

3.1.3.2

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

Item	Lead (Pb)	Cadmium (Cd)
Criteria [mg/m ²]	≤ 80	≤ 7

3.1.3.3

Synthetic resin flooring materials shall satisfy the following criteria.

- a) Phthalate plasticizers shall not be used in the manufacturing process. However, post-consumer waste materials containing phthalate plasticizers shall be excluded, unless they are used on the top layer of the flooring.

Note) The top layer includes a surface coating layer, a transparent film layer, a print layer and an impregnated glass fiber layer, and is separated from the bottom layer under by a foam layer or a base layer.

- b) The total content of phthalate plasticizers in a product^{Note)} shall satisfy the following criteria.

Item	Single layer type	Lamination layer type	
		Phthalate plasticizer	Effective resource

		unused product	recycled product
Criteria [weight%]	≤ 0.1	≤ 0.1	≤ 3.0

Note) The total content shall be the sum of each content of DBP(dibutylphthalate), BBP(butylbenzylphthalate), DEHP(di-(2-ethylhexyl) phthalate), DINP(di-(iso-nonyl) phthalate, DNOP(di-n-octyl phthalate) and DIDP(di-(iso-decyl)phthalate).

3.1.4

With respect to product life effect on resource consumption in the usage stage, the following criteria shall be adhered to:

3.1.4.1

Fibrous flowing materials shall be partially replaceable in structure when damaged.

3.1.4.2

Flooring materials that are replaceable in structure shall be replaced by those with equivalent or higher performance levels.

3.1.5

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

3.1.5.1

With respect to radiant substances contained in inorganic flooring 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:

$$\text{Radiation index (I)} = \frac{C_{Ra}}{300} + \frac{C_{Th}}{200} + \frac{C_K}{3000}$$

3.1.5.2

The emission quantity of VOCs of a plastic flooring material, a rubber flooring material, a wood flooring material, (except for products mainly made of lumber), and a fibrous flooring material after 7 days shall not be more than 0.4 mg/m²·h and the emission quantity of toluene shall not be more than 0.080 mg/m²·h.

3.1.5.3

With respect to the emission quantity of formaldehyde of a plastic flooring material, a rubber flooring material, a wood flooring material, and a fibrous flooring material, the following criteria shall be adhered to:

- a) The emission quantity of formaldehyde shall not be more than 0.5 mg/L.
- b) The emission quantity of formaldehyde after 7 days shall not be more than 0.125 mg/ m²·h.

3.1.5.4

Synthetic rubber materials shall conform to the following criteria:

- a) 'An additive with the possibility of generating nitrosoamine' shall not be used as a rubber additive.

Note) In this standard, only zinc diethyl dithiocarbamate (ZDEC) and zinc dibenzyl dithiocarbamate (ZBEC) shall be provisionally regulated as 'an additive with the possibility of generating nitrosoamine'.

- b) The 1,3-butadiene content shall be 1 mg/kg or below 1 mg/kg.
- c) The sum of lead (Pb), cadmium (Cd), mercury (Hg) and chromium 6 (Cr⁶⁺) in rubber for flooring materials shall be less than 0.1 weight% {1000 mg / kg}.

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 Eco-label 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, reference values, 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 Eco-label 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 that the product contributes to the certificated reasons (reduced harmful substances, reduced indoor air pollutant, recycling of available product)

4. Test methods

Certification criteria		Methods of test and verification			
Environmental criteria	3.1.1	3.1.1.1	Verification of submitted documents		
		3.1.1.2	Verification of submitted documents and actual location		
		3.1.1.3	Verification of submitted documents		
	3.1.2	3.1.2.1	Test report by an accredited testing laboratory in accordance with 'the environment harmful factor of children activity space test method'		
		3.1.2.2	a)	Verification of submitted documents	
			b)	Test report by an accredited testing laboratory in accordance with KS M 0016(General rules for atomic absorption spectrochemical analysis), KS M 0032(General rules for ICP emission spectrochemical analysis)	
			c)	Test report by an accredited testing laboratory in accordance with KS M 0031(General rules for gas chromatographic analysis)	
		3.1.2.3~ 3.1.2.4	Verification of submitted documents		
	3.1.3	3.1.3.1	Verification of submitted documents		
		3.1.3.2	Test report by an accredited testing laboratory in accordance with ISO 10545-15(Ceramic tiles - Part 15: Determination of lead and cadmium given off by glazed tiles)		
		3.1.3.3	a)	Verification of submitted documents	
			b)	Test report by an accredited testing laboratory in accordance with KS M 1991 (Determination of phthalates contents in polymer materials)	

	3.1.4	Verification of submitted documents
	3.1.5.1	Test report by an accredited testing laboratory in accordance with the test methods of 4.1 and 4.2
	3.1.5.2	Test report by an accredited testing laboratory in accordance with the following method or equivalent test method <ul style="list-style-type: none"> ▪ 'Test method of indoor air quality process(pollutant emitting construction material test method)' or ▪ ISO 16000-9(Indoor air --Part 9: Determination of the emission of volatile organic compounds --Emission test chamber method) & ISO 16000-6(Indoor air -Part 6: Determination of volatile organic compounds in indoor and chamber air by active sampling on TENAX TA sorbent, thermal desorption and gas chromatography using MSD/FID)
	3.1.5	a) Test report by an accredited testing laboratory in accordance with KS F 3104(Particle board), KS F 3200(Fiber board)
		3.1.5.3 b) Test report by an accredited testing laboratory in accordance with the following test method or equivalent test method. <ul style="list-style-type: none"> ▪ Test method of indoor air quality process(pollutant emitting construction material test method) or ▪ ISO 16000-9[Indoor air -Part 9: Determination of the emission of volatile organic compounds -Emission test chamber method] and ISO 16000-3(Indoor air – Part 3: determination of formaldehyde and other carbonyl compounds – Active sampling method)
	3.1.5.4	a) Verification of submitted documents
		b) Test report by an accredited testing laboratory in accordance with KS M 0031(General rules for gas chromatographic analysis)
		c) Test report by an accredited testing laboratory in accordance with 'the environment harmful factor of children activity space test method'
Quality criteria		Test report by the relevant accredited testing laboratory in accordance to the relevant standards or certificate of standards equivalent or higher.
Consumer information		Verification of submitted documents

4.1 General matters

4.1.1

The number of test samples shall be one sample a product applied in principle. However, in case that more than one sample is required, it shall make an exception.

4.1.2

The test sample shall be randomly sampled out of the commercial products or the products kept in the producing location by an entrusted institution of label certification. However, the sampling method for verification of 3.1.5.2 and 3.1.5.3 shall be followed KS I ISO 16000-11(Indoor air – Part 11: Characteristic of volatile organic compounds emission- sampling, custody and preparation of test samples).

4.1.3

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

4.2 Measurement method of radioactivity concentration (C_{Ra} , C_{Th} , C_K)

4.2.1

Prepare test sample of 500 g by pulverizing a core layer in case of compound material or a product in case of single material.

4.2.2

Seal up the samples in a container made of PTFE(polytetrafluoro ethylene). The period of custody before the measurement of radioactivity concentration shall be 30 ± 5 days in order for radiation balance of the samples.

4.2.3

The radioactivity concentration shall be measured according to IEC 61452(Nuclear instrumentation - Measurement of gamma -ray emission rates of radionuclides - Calibration and use of germanium spectrometers) or the equivalent test methods.

Note) In case that the test sample is measured by other test methods excepting IEC 61452, the appropriateness of the method shall be determined by the examination of the eco label deliberation commission.

5. Reasons for certification

“Reduction of indoor air pollution and harmful substances, recycling of available resources (applicable product only)”

[Common Criteria]

1. The candidate products for Korea Eco-Label shall comply with the following regulations with regard to the appropriate processing of environmental contaminants that occur in the process of manufacturing or service operation, including air contaminants, water contaminants, waste and harmful chemical substances.
 - 1.1 A person who violates any environment-related law or agreement applicable in the region where his or her factory or operating establishment is located within one year prior to the date of application may not apply for Korea Eco-Label certification. For violations other than the ones subject to penalties, however, a person may apply for the certification after completion of any action for the violation.
 - 1.2 A person who has obtained Korea Eco-Label certification must comply with the environment-related laws and agreements applicable in the region where the factory or operating establishment is located during the certification period. If any violation against penal provisions is found during the certification period, however, the certification may be canceled, and for violations other than the ones against penal provisions, the certification may be suspended until the relevant action is completed.
2. In principle, the “consumer information” specified in the certification standards by product shall be marked in a way not to be removed easily on the surface of the product. If it is impossible or undesirable to mark it on the surface of a product, the information shall be marked on another appropriate part of a product where consumers will notice it, including product packaging, a guidebook, an instruction or etc. For services, however, the consumer information shall be, in principle, marked on the internal and external areas of a building where the service is provided. If it is impossible or undesirable to mark it on the internal or external area of a building, however, it shall be marked on an appropriate part where consumers can notice it, including a contract, statement of delivery, letter of guarantee or brochure.
3. A person who has applied for, or obtained approval for, use of Korea Eco-Label on a product shall comply with the Fair Labeling and Advertising Act in order to establish

fair trade order and protect consumers, and if they violate the law, their application for certification may be rejected or their certification may be canceled.

4. Unless otherwise specified, the various specifications cited in the certification criteria by product shall be the latest ones at the time of application for certification.
5. If application of the standards for quality in accordance with the certification criteria by product is deemed as inappropriate, the President of Korea Environmental Industry & Technology Institute (hereinafter referred to as KEITI president) may establish and operate the quality criteria for the product after deliberation committee review or expert consultation.