

**EL253. Access Floor**  
 [EL253-2006/4/2013-132]



**1. Scope**

The criteria shall apply to the raised access floor installed over the top of floor slabs of buildings.

**2. Definition**

2.1

"Raised Access Floor(hereinafter referred to as "access floor") refers to a flooring which has functions that can easily house power & computer communication wiring or air conditioning equipment as a floor made up of unit panels installed on top of the construct, and includes flooring excluding constituents and finishing material. In the criteria, floorings are classified according to the raw material constituting the panel as follows.

Flooring		Definition by floorings
Metal Flooring	Steel Plate	Flooring made with coated steel sheets, painted steel sheet, inorganic core steel sheet, and organic core steel sheet as its raw material.
	Aluminum	Flooring made with aluminum die casting and aluminum honeycomb as its raw material.
Inorganic		Flooring made with composite cement and calcium silicate board as its raw material.
Wooden		Flooring made with veneer board, particle board, and fiber board as its raw material.
Synthetic Resin		Flooring made with PP, PVC, and FRP as its raw material.
Cellulose		Flooring made with waste paper money, plant hard cuticle, and paper sludge as its raw material.

2.2

"Constituent" refers to the assembled product of the panel, strut, cushioning material, and finishing material.

2.3

"Panel" refers to the constituent that has the function of floor surface of floor materials for wiring.

2.4

"Strut" refers to the constituent that has the function of strut for the panel element of floor materials.

2.5

"Cushioning material" refers to the constituent that prevents the vibration or impact of the panel by installing it on the bottom of the strut or the bottom of the panel.

2.6

"Finishing material" refers to the material that has the function of preventing electrification or making the appearance beautiful by installing it on top of the panel.

2.7

"Waste material" refers to materials discharged after going through the normal distribution stage as a product and achieving its purpose, and that which is not used as products that is generated in the form of process scrap in the follow up processing process after the production of the product. However, products generated within the product manufacturing process which is put into the same process as raw material is excluded.

2.8

"Filling material" refers to the material used for preventing resonance or reinforcing the strength of the core layer of the steel plate flooring panel.

2.9

"Activity concentration index(I)" refers to the value which estimates the actual effect concentration from the emission energy of  $C_{Ra}$ ,  $C_{Th}$ ,  $C_K$  of the product, and the calculation formula is as follows.

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

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

## 2.10

"Volatile organic compounds (VOCs)" refer to the organic compound in the fluid or solid state that constantly volatilize by a certain temperature and pressure in air.

## 2.11

"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 the consumption of resources during the manufacturing process, the raw materials constituting the panel of the floor coverings shall satisfy the following requirements.

#### 3.1.1.1

In the case of steel plate flooring that is not filled, the sum of the thickness of the upper and lower metal plate shall satisfy the following requirements.

Item	500 mm × 500 mm		600 mm × 600 mm	
	R type	SP type	R type	SP type
Criteria [mm]	≤ 2.8	≤ 3.1	≤ 2.8	≤ 3.5

Note) The definition of R type and SP type follows KS F 4760 (Raised Access Floor).

#### 3.1.1.2

In the case of steel plate flooring that is filled, it shall satisfy the following requirements.

- a) It shall not use less than 40 weight percentage of waste material as its raw material of filling material.
- b) The sum of the upper and lower plate shall be not more than 2 mm.

#### 3.1.1.3

In the case of inorganic flooring, it shall not use less than 15 weight percentage of waste material among inorganic materials.

#### 3.1.1.4

In the case of wooden flooring, the amount of waste material used among wooden materials shall be not less than 70 weight percentage.

#### 3.1.1.5

In the case of synthetic resin flooring, 60 weight percentage or over of waste material among synthetic resin material shall be used.

#### 3.1.1.6

In the case of cellulose flooring, it shall not use less than 65 weight percentage of waste material.

#### 3.1.2

With respect to the use of chemical substances during the manufacturing process, the product shall not use the following materials.

##### 3.1.2.1

In the case of using flame retardants in the flooring, PBBs (polybrominated biphenyls), PBDEs (polybrominated diphenylethers), and short-chain chlorinated paraffins(C=10~13) with 50 % of chlorine concentration or over 50 %.

##### 3.1.2.2

Lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium (Cr<sup>6+</sup>)

##### 3.1.2.3

Substances falling under 'Group 1', 'Group 2A' and 'Group 2B' as the classification symbol for cancerogenic substances by IARC (International Agency for Research on Cancer)

### 3.1.3

With respect to the discharge of harmful substance in the stage of use and disposal, the product shall satisfy the following requirements.

#### 3.1.3.1

It shall not use asbestos as the constituting raw material of panels.

#### 3.1.3.2

In case paint is used in the flooring, the sum of lead (Pb), cadmium (Cd), mercury (Hg), and hexavalent chromium (Cr<sup>6+</sup>) shall be not more than 0.1 weight% {1000 mg/kg}, and lead (Pb) shall be not more than 0.06 % by weight {600 mg/kg}. However, in the case of using paint which has attained Eco-label certification according to 'Paint (EL241)' among certification criteria, the product shall be deemed as satisfying this requirements.

### 3.1.4

With respect to the emission of harmful substances during the stage of use, the product shall satisfy the following requirements.

#### 3.1.4.1

The activity concentration index (I) of the inorganic material used in the filling material and panel shall be not more than 1.0.

#### 3.1.4.2

In the case of wooden flooring, the product shall satisfy any one of the following.

- a) The formaldehyde emission of the panel shall be not more than 0.5 mg/L.
- b) It shall use products which has attained Eco-label certification as 'Wooden processed goods (EL723)' among certification criteria by products with ecolabel.

#### 3.1.4.3

The flooring including finishing material shall satisfy any one of the following with respect to VOCs emission.

- a) For the bonding agent used when attaching finishing materials and finishing materials to the panel, each product shall use ones that have attained Eco-label according to 'Indoor floor decorative material (EL246)' or 'Bonding agent (EL251)' among certification criteria by products with ecolabel.

b) The VOCs emission after 7 days shall be less than 0.4 mg/m<sup>2</sup>. h, and the toluene emission shall be less than 0.080 mg/ m<sup>2</sup>. h.

### 3.2 Quality Criteria

The quality of flooring shall satisfy the quality criteria of KS F 4760(Raised Access Floor). However, in the case of non-conductive flooring, the conductivity criteria shall not be applied.

### 3.3 Consumer Information

#### 3.3.1

Indication on the items that the product contributes to the reasons for certification (use of recycled materials, reduced harmful substances, less indoor air pollutants) during its consumption stage

#### 3.3.2

In the case of products not including finishing material, it shall indicate that the product has not been verified for the environmental aspects of using finishing material and bonding agents.

## 4. Test Methods

Certification Criteria		Test and Verification Methods	
Environmental Criteria	3.1.1~3.1.2	Verification of submitted documents	
	3.1.3	3.1.3.1	Verification of submitted documents
	3.1.3.2	Verification of submitted documents <sup>note1)</sup> or the test results of the officially recognized agency according to the following test method. <ul style="list-style-type: none"> <li>▪ 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)</li> <li>▪ 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)</li> <li>▪ Cr<sup>6+</sup> : KS M ISO 3856-5 (Paints and varnishes - Determination of “soluble” metal content: Determination of hexavalent chromium content of the liquid paint or the</li> </ul>	

			<p>paint in powder – Diphenylcarbazine)</p> <ul style="list-style-type: none"> <li>▪ 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)<sup>note2)</sup></li> </ul>
	3.1.4	3.1.4.1	Verification of test report by the accredited testing laboratory in accordance to 'test method of 4.1 & 4.2'
		3.1.4.2	Verification of submitted documents <sup>note1)</sup> or test report in accordance to 'KS F 3104 (particleboard)' <sup>note3)</sup>
		3.1.4.3	<p>a)</p> <p>Verification of submitted documents<sup>note1)</sup> or Test report by the accredited testing laboratory in accordance to the following test method or the equivalent or higher test method</p> <ul style="list-style-type: none"> <li>▪ The indoor air quality process test method (pollutant release building materials test method)</li> <li>▪ Otherwise, KS I ISO 16000-9 [Indoor air - Part 9: Determination of the emission of volatile organic compounds – Emission test chamber method] and KS I ISO 16000-6 (active sampling on the adsorbent TENAX TA, measuring the volatile organic compounds on the air indoor and chamber by the gas chromatography using thermal desorption and MSD/FID)</li> </ul>
			<p>b)</p> <p>Verification of submitted documents<sup>note1)</sup> or test report by the accredited testing laboratory in accordance to the following test method or the equivalent or higher test method</p> <ul style="list-style-type: none"> <li>▪ The indoor air quality process test method (pollutant release building materials test method)</li> <li>▪ Otherwise, KS I ISO 16000-9 [Indoor air - Part 9: Determination of the emission of volatile organic compounds - Emission test chamber method] and KS I ISO 16000-3(Indoor air – part 3 : Formaldehyde &amp; other carbonyl compounds measuring method – sampling method)</li> </ul>
Quality Criteria			Test report by the accredited testing laboratory or certificate of standards equivalent or higher
Consumer Information			Verification of submitted documents

Note 1) The certificate according to 'Paint (EL241)' among certification criteria by products with ecolabel or equivalent or higher criteria, etc.

Note 2) Preparation of test specimen : scratch on final products

Note 3) Preparation of test specimen : finish surface with equivalent surface material to final products as identical ratio

## **4.1 General Matters**

### 4.1.1

One test sample shall be required for each applied product. Only if more than one test sample is needed, the former requirement may not be met.

### 4.1.2

Test samples shall be collected at random by a certification institute from products in market or those in storage at the production site. However, the method of collecting test samples for verification of environment criteria 3.1.4.3 shall follow KS I ISO 16000-11 (Indoor air -- Part 11: Determination of the emission of volatile organic compounds -- Sampling, storage of samples and preparation of test specimens). Here, prepare the constituents (panel attached with finishing material) except for the cushioning material and strut, and make sure the entire surface is exposed when installing test specimen inside the chamber.

### 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 Method of measuring active 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  $30 \pm 5$  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**

"Use of recycled materials or Resource saving, Reduced harmful substances, Less indoor air pollutants (confined to applicable products)"

## **[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.