



## EL247 : 2022

# Assembly-type Floor Heating System





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For opinions or inquiries on these criteria, please contact the Division of Sustainable Business (Tel: 1577-7360) of the Sustainable Lifestyle & Welfare (Health) Headquarters, KEITI, or visit its website (<http://el.keiti.re.kr>).

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## Foreword

These criteria are the **criteria for Eco-label certification** revised through deliberation by the **Committee for Setting Certification Criteria** as per the procedures specified in the Environmental Technology and Industry Support Act.

Accordingly, EL247. Assembly-type Floor Heating System 【EL247-2003/4/2013-23】 has been revised to these criteria.

It should be noted that part of these criteria could be in violation of a patent right with the technical nature, application for patent after laying open the application, utility model right or application for utility model registration after laying open the application. The Minister of the Environment shall not be held accountable for checking matters related to this patent right with the technical nature, application for patent after laying open the application, utility model right or application for utility model registration after laying open the application.

**This document is a translation of a Korean original. In case of dispute, the original document should be taken as authoritative.**

**Criteria for Eco-Label Certification****EL247:2022****Assembly-type Floor Heating System****1 Scope**

These criteria prescribe methods to verify whether, among assembly-type heating systems that heat indoor floors by circulating hot water (hereinafter referred to as the “heating system”), a product constructed by employing a dry method without using finishing mortar conforms to the criteria for Eco-label certification.

**2 Normative References**

The following documents, in whole or in part, are essential for application of these criteria. In the case of a reference with its publication date, only the cited edition shall apply. For a reference without its publication date, its latest edition (including all additions) shall apply.

KS B 8025, Floor panels for warm water heating

KS C IEC 62321, Electric and electronic products - Determination of levels of six regulated substances (lead, mercury, cadmium, hexavalent chromium PBBs and PBDEs)

KS M 0180, Test method for halogen (F, Cl, Br) and sulfur determined by ion chromatography after thermal oxidation hydrolysis

KS M 0016, General rules for atomic absorption spectrometry

KS M 0032, General rules for ICP emission spectrochemical analysis

KS M 1072, Determination of brominated flame retardants in polymer materials

KS Q 5002, Statistical presentation of data

**3 Terms and Definitions**

For the purposes of these criteria, the following terms and definitions shall apply.

**3.1 Ozone depletion potential (ODP)**

Value that represents the relative impact of a substance influencing the depletion of the ozone layer with the effect of CFC-11 on the ozone layer depletion being 1.

**3.2 Global warming potential (GWP)**

Value that represents the relative impact of a substance influencing global warming with the effect of carbon dioxide (CO<sub>2</sub>) on global warming being 1

**Note** The GWP for a 100-year time horizon under the Climate Change 2014, the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC) shall apply to these criteria.

## 4 Environmental Criteria

Items related to the environment taking into consideration the life-cycle stages of the heating system are shown in **Table 1**.

**Table 1 Items related to the environment by life-cycle stage of heating system**

Life-cycle stage	Items related to the environment	Environmental improvement effect
Raw material extraction	-	-
Manufacture	▪ Resinous additives	▪ Reduction in use of harmful substances
	▪ Foaming agents in foaming materials	▪ Reduction in emissions of greenhouse gases and ozone layer-depleting substances
	▪ Flame retardants	▪ Reduction in use of harmful substances
Distribution/use/consumption	▪ Thermal radiation capability at upper part and deviation of surface temperatures	▪ Energy conservation
	▪ Materials of parts in contact with warm water	▪ Saving resources
	▪ Product replacement structure	▪ Saving resources
Disposal	-	-
Recycling	-	-

### 4.1 Resinous additives

For resinous additives, organotin compounds [tributyl tins (TBT) and triphenyl tins (TPT)], lead (Pb) compounds and cadmium (Cd) compounds should not be used, and lead (Pb), cadmium (Cd) and mercury (Hg) contained in resins should meet **Table 2**.

**Table 2 Criteria for content of harmful elements in resins**

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

### 4.2 Foaming agents in foaming materials

In cases where a foaming agent is used as materials constituting a product, materials whose ODP is 0 and GWP is 100 or less should be used as a foaming agent.

**Note** For mixed foaming agents, GWP value obtained through weighted average shall apply.

### 4.3 Flame retardants

Polybrominated biphenyls (PBBs), polybromodiphenyl ethers (PBDEs), tetrabromobisphenol A (TBBPA), or hexabromocyclododecane (HBCD) should not be used as flame retardants; provided, however, that if the sum of PBBs, PBDEs, TBBPA and HBCD contents is 100 mg/kg or less, or the total bromine (Br) content is 30 mg/kg or less, it shall be considered to comply with this criterion.

### 4.4 Thermal radiation capability at upper part and deviation of surface temperatures

Thermal radiation capability at upper part and deviation of surface temperatures should meet **Table 3**.

**Table 3 Criteria for thermal radiation capability at upper part and deviation of surface temperatures**

Item	Thermal radiation capability at upper part (kJ/m <sup>2</sup> ·s)		Deviation of surface temperatures (°C)
Criteria	Metallic thermal radiation products	≥0.20	≤5
	Synthetic resinous thermal radiation products	≥0.10	

#### 4.5 Materials of parts in contact with warm water

Stainless steel (STS 304 and STS 316), copper and copper alloy, or synthetic resins (excluding chlorine-containing synthetic resin) should be used at parts that come in contact with warm water in order to prevent scaling or corrosion.

#### 4.6 Product replacement structure

The product should have a structure that allows individual units and main components to be replaced and re-assembled with ease.

### 5 Quality Criteria

**5.1** If there are the Korean Industrial Standards available for the applicable product, such product should meet the criteria for quality and performance set forth in the applicable standards; provided, however, that items related to **Section 4** (Environmental Criteria) shall be excluded.

**5.2** If there are no Korean Industrial Standards available, such product should meet the criteria for quality and performance in order of priority as follows; provided, however, that items related to **Section 4** (Environmental Criteria) shall be excluded from the criteria for quality and performance.

- a) National standards other than the Korean Industrial Standards;
- b) Foreign countries' standards or international standards regarding the quality of the applicable product;
- c) Collective standards in accordance with Article 27 of the Industrial Standardization Act

**5.3** In cases where **5.1** or **5.2** cannot apply, an applicant may present criteria for quality and performance according to collective standards, etc. considered to be equivalent to or higher than the national standards by the industry of the applicable product and file a request for such criteria to be applied. Upon request of the applicant, the **Certification Deliberation Committee** should perform deliberation, taking into consideration the validity of the application of the quality and performance standards presented; provided, however, that items related to **Section 4** (Environmental Criteria) shall be excluded from the criteria for quality and performance.

## 6 Consumer Information

Reasons for certification of a product including contributions the product makes to reducing environmental impacts shall be stated on a catalog, etc.

## 7 Verification Method

Verification methods by item of the certification criteria are as shown in **Table 4**.

**Table 4 Verification methods by item of certification criteria**

Item of certification criteria		Verification method
Environmental criteria	<b>4.1</b>	Checking submitted documents and a test certificate issued by an accredited institution pursuant to <b>8.2</b>
	<b>4.2</b>	Checking submitted documents
	<b>4.3</b>	Checking submitted documents or a test certificate issued by an accredited institution pursuant to <b>8.3</b> or other test methods equivalent thereto
	<b>4.4</b>	A test certificate issued by an accredited institution pursuant to <b>8.4</b>
	<b>4.5~4.6</b>	Checking submitted documents
Quality criteria		A test certificate issued by an accredited institution pursuant to the applicable standards or a certificate pursuant to criteria equivalent thereto or higher
Consumer information		Checking submitted documents

## 8 Testing Method

### 8.1 General

- a) In principle, the number of test samples shall be one (1) piece for each product for which application has been filed; provided, however, that if more than one test sample is necessary, more samples may be added.
- b) The test sample shall be randomly collected among products that either have been already marketed or have been on standby for release by an institution to which the affairs of granting the Eco-label certification are entrusted.
- c) The test results shall be rounded by adding 1 or more digits to the number of digits of the individual standard value pursuant to KS Q 5002; provided, however, that if the testing method prescribes the number of digits to be rounded, it shall apply.

**Note** A test certificate should specify matters related to rounding.

### 8.2 Resinous additives

Tests shall be carried out in accordance with KS M 0016 and KS M 0032.

### 8.3 Flame retardants

#### 8.3.1 PBBs, PBDEs

Tests shall be carried out in accordance with KS C IEC 62321.

### 8.3.2 TBBPA, HBCD

Tests shall be carried out in accordance with KS M 1072.

### 8.3.3 Total bromine (Br)

Tests shall be carried out in accordance with KS M 0180.

## 8.4 Thermal radiation capability at upper part and deviation of surface temperatures

Tests shall be conducted in accordance with KS B 8025.

## 9 Reasons for Certification

Category of Reason for Certification	Improvement in Resource Circulation <sup>a</sup>	Saving Energy <sup>b</sup>	Reduction in Environmental Pollution on Earth <sup>c</sup>	Reduction in Regional Environmental Pollution <sup>d</sup>	Reduction in Harmful Substances <sup>e</sup>	Reduction in Pollution of Living Environment <sup>f</sup>	Reduction in Noise and Vibration <sup>g</sup>
Relevance		●		●	●		
<sup>a</sup> Saving resources and water, improvement of recyclability, recycling effective resources, etc. <sup>b</sup> Saving energy, use of renewable energy, etc. <sup>c</sup> Reduction in greenhouse gas emissions, reduction in emissions of ozone layer-depleting substances, etc. <sup>d</sup> Reduction in emissions of air pollutants, water pollutants and soil pollutant, reduction in waste generation, better biodegradability, etc. <sup>e</sup> Reduction in use of harmful substances, reduction in exposure to harmful substances, etc. <sup>f</sup> Reduction in emissions of indoor air pollutants, reduction in light pollution, etc. <sup>g</sup> Reduction in noise and vibration							

**[Common Criteria]**

1. Those who have received the Eco-label certification should comply with the environmental regulation standards during the certification period. However, even if the environmental regulation standards have been violated, they shall be considered to be complied with, if the details of such violation, measures to correct the violation and measures to prevent recurrence including each of the following are submitted to the President of the Korea Environmental Industry and Technology Institute (hereinafter referred to as "the KEITI President") and such measures are taken within one month from the date of such violation.
  - A. A list of the environmental regulation standards applicable in the area where the certification holder is located
  - B. A system to implement the environmental regulation standards (including an organization chart describing roles and responsibilities)
  - C. Regulations on retaining archived records and documents related to implementation of the environmental regulation standards.
2. With regard to labeling for "Consumer Information" specified in the certification criteria for each product, the following should be complied with.
  - A. "Consumer Information" related to the product should be stated on the surface of the product. However, in cases where the KEITI President acknowledges that it is not possible or desirable to state it on the surface of the product, Consumer Information may be stated on other appropriate area(s) where it can be easily legible by consumers, such as the product package, product guide or user manuals;
  - B. "Consumer Information" related to services should be displayed on the inside/outside of the premises of such service provider. However, in cases where the KEITI President acknowledges that it is not possible or desirable to display it on the inside/outside of the premises, Consumer Information may be displayed on other appropriate area(s) where it can be easily legible by consumers such as contracts, delivery statements, warranties, or promotion materials.
3. Those who intend to obtain, or has obtained, Eco-label certification should comply with the Act on Fair Labeling and Advertising to ensure fair transactions and protect consumers, and should not place any false labeling or advertising regarding environmental aspects of the product in accordance with Clause 10 of Article 16 of the Act. In addition, those who have obtained Eco-label certification should manage the eco-labeled product with a unique trade (model) name not to mislead consumers.
4. In cases where there are restrictions related to raw materials to be used or places for a product to be used, etc. in accordance with other laws or regulations or where there are regulations requiring a product to be certified prior

to its production, etc., all the applicable certification criteria and regulations for each product should be complied with.

5. With regard to the various specifications cited in the certification criteria for each product, the latest versions of the standards at the time of application for certification shall apply unless otherwise noted. If the applicable regulatory criteria become stricter than the certification criteria of each product due to a revision of relevant laws and regulations, the stricter regulatory criteria shall tentatively apply, and if the criteria are abolished, the most recent version before the revision shall tentatively apply until the applicable certification criteria are revised.
6. When it is judged that the application of quality-related standards in accordance with the certification criteria of each product is not appropriate, the KEITI President may set and implement quality criteria for the applicable product.

**[Verification Methods In Accordance With Certification Criteria]**

1. The test certificate in accordance with the prescribed testing methods shall mean a test report issued by one of the agencies listed below. However, when a person applying for the Eco-label certification wants to use a test/inspection institution not included in the list below for verification, such verification should be conducted in the presence of an expert designated by the KEITI President.
  - A. KEITI in accordance with the Korea Environmental Industry and Technology Institute Act;
  - B. Test/inspection institutions recognized by the accreditation system for test/inspection institutions in accordance with Article 23 of the Framework Act on National Standards (e.g. test/inspection institutions accredited by KOLAS);
  - C. Test/inspection institutions designated and recognized by the head of a central administrative agency in accordance with relevant laws;
  - D. Foreign test/inspection institutions in conformity to the ISO/IEC 17025;
  - E. Test/inspection institutions recognized by the KEITI President when it is difficult to conduct tests in one of the institutions specified from A to D.
2. If the KEITI president requests data related to the test, the test/inspection institution that issued a test certificate in accordance with Clause 1 herein should grant the request unless there is a specific reason for not doing so. If the institution rejects the request of KEITI President without a justifiable reason, the test/inspection institution may face restrictions on testing and inspection work to be entrusted.
3. Checking the submitted documents is to verify whether a product meets the certification criteria based on test reports, raw material supply/production statements, product-related certificates, user manuals, guidebook, or the product provided by a person who intends to receive the Eco-label certification in order to prove that the product complies with the applicable certification criteria. In the case of services, performance data, evidentiary documents and on-site photos may be included.
4. If a person who has already received the certification seeks to obtain additional certification for a model using the same raw materials, parts or materials as those of the certified product, the previous verification results may be used for the applicable raw materials, parts or materials; provided, however, that the test report pursuant to Clause 1 should be less than 12 months old as of the date of application for certification.
5. In the case of certification in accordance with 2 of Clause 3 of Article 4, the KEITI President shall randomly select one sample from models in the product line and verify it representatively.

6. In the case of certification in accordance with 3 of Clause 3 of Article 4, the KEITI President shall randomly select one sample from models in the product line and verify it representatively. However, in cases where some of environmental and quality information varies from model to model, which affects the verification results, each model shall be separately verified according to the environmental or quality criteria.
7. If the certification criteria have the rate of waste material use set for each product, circulated resources recognized in accordance with the Framework Act on Resources Circulation shall be considered as waste materials.
8. Notwithstanding Clause 3, if it is difficult to conduct verification only with submitted documents or it is necessary for follow-up management pursuant to Article 28(2) of the Act, verification shall be conducted through tests equivalent to those in Clause 1. In this case, if test methods are not prescribed, the test method of the standards may be applied in the following order:
  - A. Korean Industrial Standards;
  - B. National standards other than the Korean Industrial Standards;
  - C. International standards;
  - D. Collective standards in accordance with the Industrial Standardization Act;
  - E. Test method commonly used internationally which is recognized by the KEITI President.