

# EL207. Electric Cables

[EL207-2000/5/2010-13]



## 1. Scope

The criteria shall apply to insulated wire and cable for power, control, electrical wiring and communication, which are 22.9 kV or less.

## 2. Definitions

### 2.1

“Non-flammability” refers to a feature not to spread a fire even if insulators or sheath has burned out. This can be determined by each test method required for each use of cables.

### 2.2

“Sheath” refers to the covering parts of the product surface to protect the conductor and insulator inside.

## 3. Certification Criteria

### 3.1 Environmental criteria

#### 3.1.1

With respect to using chemicals during the manufacturing process, the product shall comply with the following requirements.

##### 3.1.1.1

The harmful elements contained in components of the product shall satisfy the following criteria.

Harmful Element	Lead(Pb)	Cadmium(Cd)	Mercury(Hg)	Hexavalent chromium(Cr <sup>6+</sup> ) <sup>Note)</sup>
Standard [mg/kg]	≤1000	≤100	≤1000	≤1000

Note) In the event that total chromium content is less than 1000 mg/kg, it shall be deemed to have met the standards.

##### 3.1.1.2

When using flame-retardants for the cable, PBBs (polybrominated biphenyls), PBDEs (polybrominated diphenylethers), or short-chain chlorinated paraffins (C= 10~13) whose chlorine concentration is 50% or more shall not be used as flame-retardants.

#### 3.1.1.3

Halogen synthetic resin such as PVC shall not be used in insulator and sheath of the product.

### **3.2 Quality Criteria**

#### 3.2.1

The insulated wire and cable for power, control, electrical wiring and communication, being 6/10 kV or less, shall satisfy the quality standards appropriate for the use voltage range of the relevant product, as per KS C 3341 (Halogen free flame retardant polyolefin power control, cable & insulation wire).

Note) When insulator or sheath types not presented in the corresponding standard are used, the insulator shall conform to the standards of cross-linked polyethylene insulation, and the sheath to the standards of the polyolefin halogen free flame retardant sheath.

#### 3.2.2

The power cable of 22.9 kV or less shall satisfy the quality standards of KS C 3404 (22.9kv concentric neutral type cross-linked polyethylene insulated power cable)

Note) Sheath types not presented in the corresponding standard shall conform to the standards of polyolefin sheath.

#### 3.2.3

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.

#### 3.2.4

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.).

#### 3.2.4.1

National standards other than Korean Industrial Standards.

#### 3.2.4.2

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

#### 3.2.4.3

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

#### 3.2.4.4

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

### 3.3 Information for Consumers

Indication of matters contributing to reasons (non-flammability, low toxicity, less harmful substances) for the certification of the concerned product at the stage of consumption

## 4. Test Methods

Certification Criteria			Test and Verification Methods
Environmental Criteria	3.1.1	3.1.1.1 ~3.1.1.2	Test report by an accredited testing laboratory in accordance with 'Test method 4.1 and 4.2' or submitted documents in accordance with 'Test method 4.2'
		3.1.1.3	Verification of submitted documents
Quality Criteria	3.2.1		Test report by an accredited testing laboratory in accordance with the KS C 3341 (Halogen free flame retardant poly-olefin power control, cable & insulation wire) or certificate of equivalent
	3.2.2		Test report by an accredited testing laboratory in accordance with KS C 3404 (22.9kv concentric neutral type cross-linked polyethylene insulated power cable), or equivalent certificate.
	3.2.3~3.2.4		Test report by an accredited testing laboratory in accordance with the applicable standards or certificate of equivalent
Consumer Information			Verification of submitted documents

## **4.1 General Matters**

### 4.1.1

Two test samples shall be required for each applied product. Each length shall be at least 50m. However, in case of more than one test sample is necessary, it shall not be needed to.

### 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.

### 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 Test method for measuring the content of the hazardous substances**

Note) This is one of the test methods applicable to verify the content of lead (Pb), cadmium (Cd), mercury (Hg) and hexavalent chromium ( $\text{Cr}^{6+}$ ) contained in the parts of the product. The content of the hazardous substances can be also verified according to the internationally recognized test methods. In this case, test method including pre-conditioning method shall be specified in detail and the specified test method shall be approved by deliberation committee of eco-label certification.

### 4.2.1

Test samples shall be homogenized by pre-conditioning method such as pulverization of each part.

### 4.2.2

Analysis method of lead (Pb), cadmium (Cd), mercury (Hg), hexavalent chromium ( $\text{Cr}^{6+}$ ), total chromium (Cr)

#### 4.2.2.1

Lead (Pb), Cadmium (Cd): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and Inductively coupled plasma mass spectrometry (ICP-MS)

#### 4.2.2.2

Mercury (Hg): Atomic absorption spectrochemical analysis by using gold amalgamation method and KS M 0016 (General rules for atomic absorption spectrochemical analysis)

#### 4.2.2.3

Hexavalent chromium ( $\text{Cr}^{6+}$ ): Ultraviolet spectrophotometric analysis by diphenylcarbazide and Ultraviolet spectrophotometric analysis by lead acetate trihydrate

#### 4.2.2.4

Total chromium (Cr): KS M 0016 (General rules for atomic absorption spectrochemical analysis), KS M 0032 (General rules for ICP emission spectrochemical analysis) and Inductively coupled plasma mass spectrometry (ICP-MS)

### **5. Reasons for Certification**

“Non-flammability, Low toxicity, Less harmful substances”

## **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.