

# **EL408. Electric Kettles and Electric Coffee Makers**

[EL408-2005/2/2009-72]



## **1. Scope**

The criteria shall apply to the electric kettles and electric coffee makers generally used for house, with rated voltage 2.0kW or less.

## **2. Definitions**

### 2.1

"Rated consumption power" refers to the electric power consumed when the product is operated at a maximum load condition in the ordinary state.

### 2.2

"Coffee extraction capacity" refers to the maximum amount of water used for extracting coffee from the coffee beans with the electric coffee maker, in this criteria, it is the maximum level in the water tank of the electric coffee maker.

### 2.3

"Ozone depletion potential (ODP)" refers to the value representing the relative impact of ozone depleting substances when the impact of CFC-11 to ozone depletion is set to be 1.

## **3. Certification criteria**

### **3.1 Environmental criteria**

#### 3.1.1

With respect to the energy consumption in the use stage, the product shall satisfy the following criteria.

##### 3.1.1.1

Electric kettle

a) The power shall be automatically off when the water boils.

b) The consumption power when boils the water, it shall be 120Wh or less per 1L of water, at this time, the temperature shall be 99°C or more right after the power is off.

#### 3.1.1.2

Electric coffee maker

a) The energy efficiency for 1L of water consumed for extracting coffee shall be 72% or more.

b) The required consumption power for heating 1L of water for 60 minutes shall be less than 45Wh.

Note) If the coffee extraction capacity of the product is less than 1L, it applies for the coffee extraction capacity.

#### 3.1.2

With respect to the use of chemicals in manufacturing stage, or the recyclability of the part in disposal stage, the product shall satisfy the following criteria.

Note) This Criteria shall not applied on materials which are exempted from Hazardous Substances Restriction lists on EU Directive 2002/95/EC and lead in solder of printed circuit board (PCB). However, in case of revision of EU Directive 2002/95/EC, this shall follow revised EU Directive which is applicable at the time the application for eco-label certification.

##### 3.1.2.1

Lead, cadmium, mercury, and their compounds, the hexavalent chromium compounds shall not be used.

##### 3.1.2.2

With respect to the Pb, Cd, Hg, hexavalent chromium ( $\text{Cr}^{6+}$ ) contained in the part of the product, it shall be complied with one of the following.

a) The proper control system shall be built and operated for the harmful elements contained in the part of the product to comply with the following criteria.

Item	Pb	Cd	Hg	hexavalent chromium (Cr <sup>6+</sup> )
Criteria [mg/kg]	≤1000	≤100	≤1000	≤1000

b) If the proper control system is not built and operated for the corresponding harmful elements, the harmful elements contained in the part of the product shall comply with the following criteria.

Item	Pb	Cd	Hg	hexavalent chromium (Cr <sup>6+</sup> ) (note)
Criteria [mg/kg]	≤1000	≤100	≤1000	≤1000

Note) If the total content of chrome(Cr) is 1000mg/kg or less, it is regarded as appropriate for the standard.

### 3.1.2.3

The product shall not use polybrominated biphenyls (PBBs), polybrominated diphenylethers (PBDEs), short-chain chlorinated paraffins (C=10~13) that has more than 50% of chlorine as flame retardant in the manufacturing process.

### 3.1.2.4

The halogen-class synthetic resin such as PVC shall not be used, and the halogen compounds shall not be included in the synthetic resin. However, the organic fluoride additives (e.g. anti-dripping agent) of 0.5weight% or less shall be allowed.

### 3.1.3

With respect to the recycling capability of the product in the manufacturing process and the recycling or disposal stage, the product shall satisfy the following requirements.

#### 3.1.3.1

The classification of quality shall be marked on each part of synthetic resin used for the product (with more than 25g and more than 200 mm<sup>2</sup> flat part) in order to make separation and withdrawal of the product easy in the disposal stage.

#### 3.1.3.2

More than 25g of synthetic resin parts consisting the housing shall be made up of less than 4 kinds of polymer or polymer alloy that are separable.

#### 3.1.3.3

Halogen group synthetic resin including PVC, should not be used for the products and packing materials.

#### 3.1.3.4

The packaging shock-absorbing material of the product shall use recycled paper and pulp such as a pulp-mold. However, the following cases shall be considered for the same material.

- a) Packaging shock-absorbing material acquired the environment certificate by 'EL 606. Packaging materials'
- b) Packaging shock-absorbing material manufactured with the waste synthetic resin of 50weight% or more
- c) Foaming synthetic resin (EPS, EPE, EPP) packaging shock-absorbing material manufactured with the zero ODP material as a foaming agent
- d) Air cell packing bubble wrap that injects air into synthetic resins.

### **3.2 Quality criteria**

The product quality shall comply with the requirements of the safety standard for the electrical appliances according to the Korean Safety and Control Act for Electric Appliances.

### 3.3 Consumer Information

Indication for the items that contribute to the reasons for certification of the product (low content of the harmful substance, energy saving) in the use stage

## 4. Test Methods

Certification Criteria		Test and Verification Methods	
Environmental Criteria	3.1.1	3.1.1.1	Test report by an accredited testing laboratory in accordance with Test Methods 4.1 and 4.2
		3.1.1.2	Test report by an accredited testing laboratory in accordance with Test Methods 4.1 and 4.3
	3.1.2	3.1.2.1	Verification of submitted documents
		3.1.2.2	Test report by an accredited testing laboratory in accordance with Test Methods 4.4
		3.1.2.3 ~3.1.2.4	Verification of submitted documents
	3.1.3	Verification of submitted documents	
Quality Criteria		Test report by an accredited testing laboratory in accordance with the safety standards for electric appliances or certificate of equivalent	
Consumer Information		Verification of submitted documents	

### 4.1 General Matters

#### 4.1.1

One test sample shall be required for each applied product. However, the number of samples can be added as necessary.

#### 4.1.2

The power consumption test shall be conducted at a laboratory at a room temperature of  $20 \pm 2^\circ\text{C}$  where forced convection is not present. Water temperature shall be  $15 \pm 0.5^\circ\text{C}$  and the test voltage shall be  $\pm 1\%$  of the rated voltage. The test sample shall be at room temperature.

#### 4.1.3

Test samples shall be collected at random by a certification institute from products in market or those in storage at the production site.

#### 4.1.4

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 Power consumption test and the water temperature test for an electric kettle**

#### 4.2.1

Power consumption when water is boiled: Power consumption shall be considered as the quantity of power measured from the time when the test sample is operated under a standard usage state after being filled with 1 L water to the time when power is automatically turned off after the water has boiled. With regards to electric kettles with a rated capacity under 1 L, power consumption shall be measured by converting the maximum usage applied during the test in proportion to the power consumption to 1 L. If re-testing is conducted on the same test sample, first checking whether the corresponding test sample has returned completely to room temperature is required.

#### 4.2.2

Measure the water temperature right after the power is off by boiling water. If necessary, stir the water to make the temperature uniform, however, it shall be careful not to lower the temperature significantly.

### **4.3 Test of the power consumption and the energy efficiency of the electric coffee maker**

#### 4.3.1

Energy efficiency when extracting coffee: Pour 1L of water(coffee extraction capacity, in case the coffee extraction capacity is less than 1L) into the water tank, and measure the temperature(T1). Measure the power consumption from when the power switch is on to the termination of the

coffee extraction, and regard it as a measured power consumption. The termination point of coffee extraction shall be the time when the water in tank is used up and the heating power device is stopped automatically. Right after the coffee extraction is terminated, measure the coffee temperature(T2) and calculate the efficiency with the following formula.

$$\text{Efficiency} [\%] = \frac{\text{Water} [\text{mL}] \times (T_2 - T_1)}{\text{Measured consumed wattage} [\text{Wh}]} \times \frac{1 [\text{Wh}]}{860 [\text{cal}]} \times 100$$

Note) The temperature of coffee extraction (T2) shall be 82°C. If the range of the coffee extraction temperature is out of 82±2°C, record the measured temperature to the test result, and its appropriateness shall be decided by the examination from the Eco label certificate committee.

#### 4.3.2

Power consumption when warming the coffee: Measure power consumption when warming the coffee for an hour passed approximately 30 minutes from when the coffee extraction is terminated in accordance with 4.3.1.

### **4.4 Test and Verification Methods for the Use Limitation of The Harmful Element**

#### 4.4.1

The verification method for the proper management system construction and operation of harmful element

Note) This method is to verify the appropriateness of the use limitation standard for lead, cadmium, mercury, and their compounds, hexavalent chromium (Cr<sup>6+</sup>) in the parts comprising the product. It can be applied to verify if the applicant manage properly for PBBs, PBDEs, short-chain chlorinated paraffins (C=10~13) other than harmful element.

##### 4.4.1.1

Verify the appropriateness by checking one of the following 4.5.1.1.1~4.5.1.1.4, the equivalent document, or the test result.

a) Instruction sheet and relevant document about the management system prepared for managing properly the corresponding element when the producer is provided the parts from the supplier

b) Test result conducted in-house to manage corresponding harmful element properly, when the producer is provided the parts from the supplier (In this case, there should be clearly indicated the specific test methods including applied pre-treatment methods.)

c) Certificates (e.g. Eco label certificate for EL 763.Electrical and Electronic Parts) from the third party accredited laboratory that can prove the appropriateness of the part comprising the product

d) Other data that can prove the applicant manage corresponding harmful element properly, when the producer is provided parts from the supplier

#### 4.4.1.2

In case it is difficult to evaluate whether the management system for harmful element is properly operated according to 4.5.1.1, or the Eco label certificate committee requests the test result of the particular part, verify the randomly sampled part in accordance with 4.5.2 Test method for the content of harmful element.

#### 4.4.2

Test method for the content of harmful element

Note) This is one example of test methods to verify the content of Pb, Cd, Hg, and hexavalent chromium ( $\text{Cr}^{6+}$ ) contained in the part comprising the product. It is possible to verify with the other method that can be used internationally in common. In this case, specific test method including the pre-treatment methods shall be indicated, and its appropriateness shall be decided by the examination from the Eco label certificate committee.

#### 4.4.2.1



The part to conduct test of the harmful element content shall be collected at random by a certificate institute.

#### 4.4.2.2

With respect to the sample to analyze the content, it makes a principle to prepare the sample as homogeneous materials by suffering crushing by the basic unit of the parts.

#### 4.4.2.3

Analyzing method of Pb, Cd, Hg, hexavalent chromium ( $\text{Cr}^{6+}$ ), chromium (Cr)

a) Pb, Cd: KS M 0016 (Atomic absorption analysis methods), KS M 0032 (High frequency ICP emission spectroscopic analysis methods), High frequency ICP mass spectrometer (ICP-MS)

b) Hg: Atomic absorption analysis methods by heating vaporization gold amalgamation, KS M 0016 (Atomic absorption analysis methods)

c) hexavalent chromium ( $\text{Cr}^{6+}$ ): Ultraviolet rays spectrometry by diphenylcarbazide method, and ultraviolet rays spectrometry by lead acetate trihydrate method

d) chromium (Cr): KS M 0016 (Atomic absorption analysis methods), KS M 0032 (High frequency ICP emission spectroscopic analysis methods), ICP mass spectrometer (ICP-MS)

## 5. Reasons for Certification

"Reduced harmful substances, Energy-Saving, Design for Environment"

## **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.