

## **EL402. Washing Machines**

[EL402-1998/7/2011-10]



### **1. Scope**

The scope shall apply to the volute type and agitator type household fully automatic washing machine below 12kg class (12.0 ~ 12.9kg).

### **2. Definitions**

#### 2.1

“Standard washing capacity” refers to the value set numerically in the first decimal place of the maximum weight [kg] of laundry that can be washed for one time.

#### 2.2

“Volute type” refers to the way of washing by the revolving motion of revolving propeller equipped on the bottom of laundry tub.

#### 2.3

“Agitator type” refers to the way of washing by the agitating motion of agitating propeller equipped on the bottom of laundry tub.

#### 2.4

“Drum type” refers to the way of washing by the revolving drum equipped horizontally.

#### 2.5

“Automatic” refers to the automatic performance of each administration of washing, rinsing and dehydrating without manual operation.

#### 2.6

“Standard cycle” refers to the cycle on washing, rinsing and dehydrating suggested by the manufacturer as standard.

#### 2.7

“Washing adjunct agent” refers to the agent not containing surfactant that is used by being put into washing machine with the purpose to enhance the cleansing power in the laundry system not using common laundry detergent.

2.8

“Cool-Water Washing” refers to washing by tap-water without additional heating operation.

### 3. Certification Criteria

#### 3.1 Environmental Criteria

3.1.1

With respect to the consumption of resource and energy at the use stage, the product shall satisfy the following requirement.

3.1.1.1

The amount of water consumption shall satisfy the following requirement.

Standard Washing Capacity Item & Applied system <sup>note1)</sup>		Water consumption[L/kg laundry]			
		< 7.0kg class	7.0~9.0kg	9.0~11.0kg	≥11.0kg
Volute/ Agitator type	Use Detergent	≤ 28	≤ 26	≤ 24	≤ 22
	Non-use Detergent <sup>note2)</sup>	≤ 22	≤ 20	≤ 18	≤ 16
Drum type	Use Detergent	≤ 11	≤ 11	≤ 11	≤ 11
	Non-use Detergent	≤ 11	≤ 11	≤ 11	≤ 11

Note1) In case that the products applying both system shall meet both criteria.

Note2) Include system using 'Washing adjunct agent'.

3.1.1.2

Indication of Water-saving level based on water consumption shall satisfy the following requirement.

Water-saving level	1 grade	2 grade	3 grade
Water consumption[L/kg laundry]	≤ 11	11~18	>18

### 3.1.1.3

Drum type washing machine shall be equipped with Cool-Water Washing function.

### 3.1.1.4.

The product should satisfy the requirements for the first class Energy Efficiency Rating, according to the efficiency management equipment operation regulations in the Energy Use Rationalization Act.

### 3.1.2

Noise during the operation of the product shall satisfy the following requirements.

Item	Washing	Dehydrating
Noise [dB(A)]	≤ 50	≤ 55

### 3.1.3

With respect to use of chemical substances in manufacturing process and recyclability of the parts of the product at disposal stage, the product shall comply with the following requirements.

Note) Exempted from this criterion are materials exempted from EU directive 2002/95/EC and lead in solder of printed circuit board (PCB). If EU Directive 2002/95/EC is amended, this shall adopt revised EU Directive, which is applicable at the time the application for eco-label is made.

#### 3.1.3.1

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

#### 3.1.3.2

Content of lead, cadmium, mercury and hexavalent chromium<sup>6+</sup> in the parts of the product shall comply with one of the following requirements.

a) The applicant shall have an appropriate system to control the content of hazardous substances as following requirements.

Item	Pb	Cd	Hg	Hexavalent Chromium <sup>6+</sup>
Criteria [mg/kg]	≤ 1000	≤ 100	≤ 1000	≤ 1000

b) Provided that the applicant does not have an appropriate system for the control of hazardous substances, the content of hazardous substances in the parts of the product shall comply with the following requirements.

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

Note) In case the content of total chromium (Cr) is 1000 mg/kg or less, it is regarded as equivalent

### 3.1.3.3

PBBs (polybrominated biphenyls), PBDEs (polybrominated diphenylethers) and short-chain chlorinated paraffins (C= 10~13) whose chlorine concentration is 50% or more shall not be used in the product.

### 3.1.3.4

Halogenated plastics such as PVC shall not be used for the plastic case parts weighing 25g or more, and also halogenated compounds shall not be contained in the plastic parts. Exempted from this criterion are the fluorogranic additives with less than 0.5 wt% (e.g. anti-dripping).

### 3.1.4

With respect to the recycling capability of product during the recycling or disposal stage of production process, the product shall satisfy the following requirements.

#### 3.1.4.1

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

#### 3.1.4.2

Shock-absorbing materials in packaging shall be made of recycled pulp or paper such as pulp mold. However, following materials are regarded as equivalent.

a) Shock-absorbing materials certified according to 'EL 606. Packaging Materials'

b) Shock-absorbing materials manufactured by using more than 50wt% of recycled plastics

c) EPS (expanded polystyrene), EPE (expanded polyethylene) and EPP (expanded polypropylene) whose foaming agent has zero ODP

d) Air cell packing bubble wrap that injects air into synthetic resins.

#### 3.1.4.3

Applicants shall establish, implement and operate the collecting and recycling system of products to be disposed. However, in case that the applicants have managed the system by designating a professional agency and suggest specific results, the applicants shall be regarded to satisfy the requirement.

#### 3.1.5

The product shall be designed and manufactured in consideration of resource-energy saving, reduction of emitting pollutants and using harmful substances, use of recycled materials, improvement of recycling capability and expansion of life span of the product in order to reduce the environmental burden in the whole process of the product

### **3.2 Quality Criteria**

#### 3.2.1

The dehydrating level of product shall be more than 50%.

#### 3.2.2

The rinsing ratio of product shall be more than 1.05.

### **3.3 Consumer Information**

#### 3.3.1


Indicate ways of operation in accordance with laundry type and washing course.

#### 3.3.2

Indication of matters contributing to reasons (Saving water and energy, less water pollutants) for the certification of the concerned product at the stage of consumption.

### 3.3.3

Indicate Water-saving level of the products. However, 'Detail information display type' shall be used among Eco-labeling design.

	< Information of Eco-product >			
	Water-saving level : Washing machine 1 <sub>st</sub> grade			
	Water-saving level	1 <sub>st</sub> grade	2 <sub>nd</sub> grade	3 <sub>rd</sub> grade
Water consumption [L/kg laundry]	≤11	11~18	>18	

## 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 KS C 9608 (electric washing machine)
		3.1.1.3	Verification of submitted documents
		3.1.1.4	Test report or certification by an accredited testing laboratory in accordance with 'regulations on management of efficiency control equipment in accordance with the Energy Use Rationalization Act.
		3.1.2	Test report by an accredited testing laboratory in accordance with KS C 9608 (electric washing machine)
	3.1.3	3.1.3.1	Verification of submitted documents
		3.1.3.2	Submitted documents in accordance with 4.2 'verification and test method
		3.1.3.3~ 3.1.3.4	Verification of submitted documents
		3.1.4~3.1.5	Verification of submitted documents
Quality Criteria		Test report by an accredited testing laboratory in accordance with KS C 9608 (electric washing machine) or certificate of equivalent	
Consumer Information		Verification of submitted document	

### 4.1 General Matters

#### 4.1.1

One test samples shall be required for each applied product.

#### 4.1.2

Test sample 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 according to KS Q 5002 (Statistical interpretation method of the data – Part 1: Statistical description of the data).

### **4.2 Compliance verification and test method regarding the control of hazardous substances**

#### 4.2.1

Verification method for the hazardous substance management system

Note) This is the method to verify the compliance with the requirement of the restriction of the use of lead, cadmium, mercury and their compounds, and hexavalent chromium compounds in the parts of the product. This method is applicable to verify that the applicant properly controls PBBs (polybrominated biphenyls), PBDEs (polybrominated diphenylethers) and short-chain chlorinated paraffins (C=10~13).

##### 4.2.1.1

Compliance verification shall be done by one of the following documents or more.

a) Explanatory note on the management system, established by the manufacturer on purpose to control the hazardous substances when each part of the product is supplied from the suppliers, and relevant documents

b) Test result conducted by the manufacturer in order to control the hazardous substances when each part of the product is supplied from the suppliers (In this case, test method including pre-conditioning method applied shall be specified in detail)

c) Certificate issued by the accredited third party showing that each part of the product satisfies the relevant requirements (e.g. Certificate of eco-label according to 'EL 763. Electric and Electronic Parts')

d) Other documents showing that the manufacturer properly controls the hazardous

stances when each part of the product is supplied from the suppliers.

#### 4.2.1.2

In case the compliance of the management system cannot be verified by '4.2.1.1' or the test result for specific parts of the product is required by deliberation committee of eco-label certification, compliance verification shall be done by the following '4.2.2 Test method for measuring the content of the hazardous substances' for the parts collected at random by eco-label certification body.

#### 4.2.2

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 (Cr<sup>+6</sup>) 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.

##### 4.2.2.1

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

##### 4.2.2.2

Analysis method of lead (Pb), cadmium (Cd), mercury (Hg), hexavalent Chromium (Cr<sup>+6</sup>), total chromium (Cr)

- a) 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)
- b) Mercury (Hg): Atomic absorption spectrochemical analysis by using gold amalgamation method and KS M 0016 (General rules for atomic absorption spectrochemical analysis)
- c) Hexavalent chromium (Cr<sup>+6</sup>): Ultraviolet spectrophotometric analysis by



diphenylcarbazide and Ultraviolet spectrophotometric analysis by lead acetate trihydrate

d) 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**

### 5.1

Product of Use detergent applied system: "Saving water and energy"

### 5.2

Product of Non-use detergent applied system: "Saving water and energy, less water pollutants"

## **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.