

EL651. Freezing & Refrigerating Showcases

[EL651-2001/3/2009-72]



1. Scope

The criteria shall apply to showcases whose effective inside volume is 1500L or less for refrigeration and 500L or less for freezing and whose rated voltage is 250V or lower with a door designed to display, keep and sell merchandises while maintaining their freshness for a long time.

2. Definitions

2.1

“Effective inside volume” refers to the entire closed inside space which is determined according to Appendix 1 of KS C 9305 (Refrigerators and refrigerator-freezers) and which is indicated by the manufacturer.

2.2

“Ozone Depletion Potential (ODP)” refers to the value representing the relative impact of ozone depletion materials, when the impact of CFC-11 to ozone depletion is set to be 1.

3. Certification Criteria

3.1 Environmental Criteria

3.1.1

The electric power consumption per valid inside volume of the product shall comply with the following standards.

	Class		Power consumption per valid volume [Wh/L]
	Valid inside volume	Average load temperature	
Showcase exclusively for refrigeration	< 500L	-	≤ 7.5
	500~1000L	-	≤ 6.0
	≥ 1000L	-	≤ 5.0
Showcase exclusively for freezing	-	≤ -6°C	≤ 9.5
	-	≤ -12°C	≤ 11.0
	-	≤ -18°C	≤ 15.0

3.1.2

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) 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, and Hexavalent chromium compounds shall not be used in the product.

3.1.2.2

Content of lead, cadmium, mercury and Hexavalent chromium (Cr^{6+}) 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	Cr^{6+}
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	Cr^{6+} 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

3.1.2.3

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.

3.1.2.4

Refrigerants and forming agent used for the production shall have a corresponding

factor of the ozone depletion potential (ODP) equal to zero.

3.1.3

To reduce environmental impact through its life cycle, the product shall be designed and produced in consideration of resource and energy-saving, reducing pollutants and hazardous substance use, using recycled materials, improving recyclability and durability, etc

3.2 Quality Criteria

The quality of the product shall satisfy the safety standards in accordance with the 「Korean Safety and Control Act for Electric Appliances」.

3.3 Consumer Information

3.3.1

Optimal temperature when used

3.3.2

Method of recycling and contact telephone number or address in disposal

4. Test Methods

Certification Criteria		Test and Verification Methods	
Environmental Criteria	3.1.1	Test report by an accredited testing laboratory in accordance with the test method specified in 4.1 and 4.2'	
	3.1.2	3.1.2.1	Verification of submitted documents
		3.1.2.2	Submitted documents in accordance with the verification and test methods specified in 4.3'
		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.

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

All the tests shall make it a rule to be conducted in a stabilized condition in which the product is set in regular use stage and reaches to normal conditions.

4.1.4

The result of test 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 of power consumption per valid volume

4.2.1

The ambient test temperature shall be adjusted to $30 \pm 1^\circ\text{C}$, and storage compartment of the product shall be empty.

4.2.2

The temperature in the storage compartment measured at the center of it shall be within the range of the following setting temperatures. In case that the temperature in the compartment is not adjusted within the setting values in regular use state, adjust it in accordance with the method recommended by producers. Failing to adjust the temperature using producer recommending method, adjust it to be less than the setting value. In case of changing the temperature of the compartment, it shall be mentioned in the test result.

Class	Refrigerating showcase	Freezing showcase		
		$\leq -6^\circ\text{C}$ at average loading	$\leq -12^\circ\text{C}$ at average loading	$\leq -18^\circ\text{C}$ at average loading
Setting value [°C]	$3 \pm 0.5^\circ\text{C}$	$-6 \pm 0.5^\circ\text{C}$	$-12 \pm 0.5^\circ\text{C}$	$-18 \pm 0.5^\circ\text{C}$

4.2.3

When the storage compartment temperature reaches the setting value and stabilizes, measure the power consumption every 24hours three times. Average value of the three measurements is the power consumption per valid volume.

4.3 Compliance verification and test method regarding the control of hazardous

substances

4.3.1 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).

4.3.1.1

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 Korea Eco-Label according to 'EL 763. Electric and Electronic Parts')

d) Other documents showing that the manufacturer properly controls the hazardous substances when each part of the product is supplied from the suppliers.

4.3.1.2

In case the compliance of the management system cannot be verified by '4.3.1.1' 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.

4.3.2 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^{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.

4.3.2.1

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

4.3.2.2

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

“Energy-efficient, Ozone layer protection, Less wastes”

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.