

# **EL261. Gas Boilers**

[EL261-1998/6/2010-13]



## **1. Scope**

The criteria shall apply to the gas warm water boiler (hereinafter referred to as "boiler") with less than 69.5kW/251MJ/h (LPG 5kg/h, city gas 60,000kcal/h) of indicated gas consumption, using liquefied petroleum gas (LPG) or city gas. However, natural exhaustion type shall be excluded.

## **2. Definition**

### 2.1

"Indicated gas consumption" refers to the amount of gas consumed when a boiler is used at the condition of maximum gas consumption, which is indicated on the product.

### 2.2

"Condensing gas warm water boiler" refers to the boiler having a structure in which vapors inside substance created by combustion are partly condensed in order to take advantage of latent heat of vapors for heating.

### 2.3

"Consecutive noise" refers to the noise made when gas is burnt (soft noise, nozzle sound, resonant sound and so on) and to various kinds of noise generated from machines.

## **3. Certification Criteria**

### **3.1 Environmental Criteria**

#### 3.1.1

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

### 3.1.1.1

Consumed power of the product shall satisfy the following requirements by the volume of boiler.

Volume [kW]	Consumed Power [W]
$\leq 30$	$\leq 145$
$30 < \text{kW} \leq 52$	$\leq 175$
$> 52$	$\leq 200$

### 3.1.1.2

Thermal efficiency of the product shall satisfy the following requirements by type of boiler.

Item	Normal Boiler	Condensing Boiler
Thermal efficiency (based on total heating value) [%]	$\geq 82$	$\geq 87$

### 3.1.2

With respect to the release of contaminated substance at the use stage, the product shall satisfy the following requirement.

#### 3.1.2.1

Concentration of emitting nitrogen oxide of product shall be less than 50ppm (as NO<sub>2</sub>, 0% O<sub>2</sub> basis).

#### 3.1.2.2

Concentration of emitting carbon monoxide of product shall be less than 300ppm (0% O<sub>2</sub> basis).

#### 3.1.2.3

Consecutive noise of product shall be less than 50dB(A).

### 3.1.3

Post service system for replaceable parts supply and after-use service shall be established in preparation for the breakdown or damage of the product.

### 3.2 Quality Criteria

The product shall satisfy the quality criteria of KS B 8109 (gas warm water boiler) or KS B 8127 (condensing gas warm water boiler). In case of the products covered by 3.1 Environmental criteria are excluded.

### 3.3 Information for Consumers

Method of disposing the boiler after use and phone number of the waste collecting agent etc..

## 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 B 8109 (gas warm water boiler) or KS B 8127 (condensing gas warm water boiler)
	3.1.2	3.1.2.1	Test report by an accredited testing laboratory in accordance with the test methods 4.1 and 4.2
		3.1.2.2~ 3.1.2.3	Test report by an accredited testing laboratory in accordance with KS B 8109 (gas warm water boiler) or KS B 8127 (condensing gas warm water boiler)
	3.1.3		Verification of submitted document
Quality Criteria			Test report by an accredited testing laboratory in accordance with KS B 8109 (gas warm water boiler) or KS B 8127 (condensing gas warm water boiler) or certificate of equivalent
Consumer Information			Verification of submitted document

### 4.1 General Matters

#### 4.1.1

One test sample shall be required for each applied product. Only if more than one test sample is needed, the former requirement may not be met.

#### 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 Measurement Methods of Emission Density of Nitrogen Oxide

#### 4.2.1

Test Gas

##### 4.2.1.1

Liquefied Petroleum Gas (LPG): Butane gas with more than 90 volume% of normal butane (n-butane) plus iso- butane (i-butane)

##### 4.2.1.2

City Gas: Composition and calorific value of gas satisfying the following requirement.

Composition of Gas [Volume%]		Combustibility				Carbon Dioxide Concentration of Theoretical Dry Combustion Gas [Volume%]
Methane	Propane	Total Heat Emission Amount [kcal/m <sup>3</sup> , MJ/h]	Specific Gravity (Air=1)	Wobbe index [kcal/m <sup>3</sup> , MJ/h]	Maximum Combustion Potential	
85.0	15.0	11,740 49.15±2%	0.705	58.513,900	37.7	12.37

#### 4.2.2

Conditions of Test Room

##### 4.2.2.1

Temperature and moisture of the test room: 20±15°C (temperature change during the test: ±5°C), relative moisture 65±20%

Note) Measure the temperature at 4 places - front·back·left·right side that is about 1m away from the boiler, and make the average figure the temperature of test room. The height of

measurement shall be 1.5m away from the floor. In case that the upper part of boiler is less than 1.5m, the height of boiler upper part shall be the height of measurement. Also, caution shall be taken in the measurement not to be affected by released combustion gas or emitted heat.

#### 4.2.2.2

Atmosphere inside the Test Room

##### 4.2.2.2.1

Nitrogen oxide with more than 0.2% of carbon dioxide (CO<sub>2</sub>), more than 0.002% carbon oxide (CO) and more than 0.6ppm nitrogen oxide shall not be included.

##### 4.2.2.2.2

There shall not be air current that could affect the combustion.

#### 4.2.3

Test Methods: Select and apply one of the following methods. However, the position of collecting nitrogen oxide shall be within 500mm from the exhaust vent of boiler, and the conditions and atmosphere of test room shall be in accordance respectively with 4.2.1 and 4.2.2.

##### 4.2.3.1

7.6.2 of BS EN 483 (Gas fired central heating boilers: Type C boilers of nominal heat input not exceeding 70 kW)

##### 4.2.3.2

Standard of Korea Gas Petroleum Instrument Association as Group Standard: KGPA-4 (measurement methods of nitrogen oxide within exhaust gas in gas combustion instrument)

## 5. Reasons for Certification

“Energy-saving, less air 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.