

ICS 97.040  
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**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB/T 3606-2001**

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**Domestic biogas stove  
(English Translation)**

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### 1 Scope

This Standard specifies the technical requirements, test methods, inspection rules, and other contents of domestic biogas stoves.

This Standard is applicable to the domestic biogas stove of which the standard rated heat flow of a single burner is not less than 2.33 kW (2000 kcal/h).

### 2 Quoted standards

The provisions contained in the following standards, by reference in this

Standard, constitute provisions of this Standard. At the time of publication of this Standard, the versions shown are valid. All standards will be revised. The parties which use this Standard shall explore the possibility of using the latest version of the following standards.

GB/T 3768-1996 Acoustics - Determination of sound power levels of noise sources using sound pressure - Survey method using an enveloping measurement surface over a reflecting plane

GB 16410-1996 Domestic gas appliances

GB/T 16411-1996 Universal test methods of gas burning appliances for domestic use

#### 3.1 Model preparation

##### 3.1.1

Domestic biogas stove is represented by Chinese pinyin JZZ.

### **3.1.2**

The number of burners of the stove is represented by Arabic numerals.

### **3.1.3**

The product's remodeling number is represented by Chinese phonetic alphabets A, B, C, D..

## **3.2 Model denotation**

At the rated pressure, IGNITE a fire hole in the burner. The flame spreads through all fire holes for no more than 4 s.

## **4.4.2 Combustion stability**

At the rated pressure, the burner flame is uniform, stable; free of tempering, lifted flame, and yellow flame.

## **4.4.3 Small fire performance**

At 4% of the rated pressure (30 Pa, 60 Pa), the burner flame shall not be tempered or extinguished.

## **4.5 Heat efficiency**

The heat efficiency at the rated heat flow shall be greater than 55%.

## **4.6 Concentration of carbon monoxide in exhaust smoke**

When working at the rated heat flow, the concentration of carbon monoxide in exhaust smoke does not exceed 0.05% [Excess air coefficient  $\alpha=1, \%(V/V)$ ].

## **4.7 Wind resistance**

In a windy state, the burner burns stably; and shall not be extinguished and tempered.

## **4.8 Ignition rate and performance of electric igniter**

### **4.8.1**

Fire ignites 8 times and more in 10 times. There shall be no 2 consecutive failures, and no deflagration.

### **4.8.2**

When the battery voltage is 70% of the rated voltage, the ignition performance of the igniter is not affected.

#### **4.9 Surface temperature**

The surface temperature of each part of biogas stove shall be less than the following values.

a) Hand-touched parts during operation (knobs, etc.). room temperature of metal parts +25°C; room temperature of non-metal parts +35°C b) Surrounding parts of the parts which are not easy to touch by hand during operation. room temperature +105°C c) Dry battery case. room temperature +20°C

4.12.7 The outer surface and interior of the biogas stove shall be easy to clean and maintain.

#### **4.13.1 Material requirement**

- a) The parts of domestic stove can be made of cast iron, steel, non-ferrous metals, or corrosion-resistant materials. The material requirements shall meet the current relevant national standards.
- b) The nozzle, nozzle holder, and liquid tray shall be made of metal materials of which the melting point is greater than 500°C.
- c) The burner and pot bracket shall be made of metal materials of which the melting point is greater than 700°C.
- d) The gas conduit shall be made of metal materials of which the melting point is greater than 350°C.
- e) The wall thickness of cast products shall not be less than 3 mm; and there shall be no obvious casting pores and other defects. The wall thickness of stainless steel products shall not be less than 0.3 mm.

#### **4.13.2 Surface treatment**

The parts, which are made of cast iron and steel, shall be treated with electroplating, paint spraying, enamel, or other suitable anti-rust surfaces.

### **5.1 Laboratory conditions**

The laboratory conditions shall comply with the provisions of GB/T 16411.

### **5.2 Test system**

The test system shall be equipped with a biogas container with a volume of no less than 5 m<sup>3</sup>; and shall be equipped with pressure regulating equipment.

During the test, the pressure fluctuation shall be less than  $\pm 10$  Pa.

### 5.3 Biogas for test

It is stipulated that the lower heat value of artificial biogas for test is  $(21 \pm 1)$

MJ/m<sup>3</sup> (standard volume).

### 5.7.9 Electric igniter performance test

#### 5.7.9.1

The igniter which uses dry battery shall regulate the supply voltage to

70% of rated voltage.

#### 5.7.9.2

At the rated pressure, according to the following operating procedures, repeatedly IGNITE 10 times, DETECT the number of ignition. The operating procedure is to perform several preliminary ignitions in advance. The ignition operating mode and the ignition speed, according to the difference of igniters, are specified as follows.

- The single-shot piezo igniter operates once at a time. Each time the speed is controlled within 0.5~1 s;
- The rotary igniter rotates once at a time. Its rotational speed is 0.5~1 s;
- When using direct-current power continuous discharge igniter, PLACE it on the "ignition" position for 2 s, it shall be considered as once.

### 5.7.10 Surface temperature test

At 1.5 times the rated pressure, IGNITE the biogas stove; after burning for 30 min, for the stove surface, knob, gas piping joint, valve, and electric igniter housing and wire, TEST the surface temperature of all parts.

#### 5.7.11.1 Combustion noise. At 1.5 times the rated pressure, IGNITE the biogas

stove; at 1 m away from the front of the stove, USE a common sound level meter to determine in Gear A. The ambient background noise shall be less than

40 dB; or be corrected according to Table 2 in GB/T 3768-1996.

#### 5.7.11.2 Flameout noise. According to the above provisions, USE a sound level

meter to carry out the test; READ the noise variation maximum. The noise maximum plus 5 dB is used as the test value.