ICS 27.010
CCS F01

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 30978-2014

Minimum allowable values of the energy efficiency and energy efficiency grades for water dispensers

饮水机能效限定值及能效等级

Issued on: July 24, 2014 **Implemented on: June 1, 2015**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China;
Standardization Administration of China

Table of Contents

1 Scope

GB 30978-2014 is the Chinese national standard on minimum allowable values of the energy efficiency and energy efficiency grades for water dispensers, in the field of energy and heat transfer engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 24 July 2014 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 June 2015. Classification: ICS 27.010, CCS F01. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies energy efficiency grades, minimum allowable values of energy efficiency, evaluating values of energy conservation for household and similar water dispensers (hereinafter referred to as water dispensers) as well as test methods and inspection rules. This Standard is applicable to hot-cold water dispensers of which rated voltage does not exceed 250V. This Standard is not applicable to instantaneous-heating water dispensers of which rated power exceeds 4,000W.

2 Normative references

The following referenced documents are indispensable for the application of this document.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 2828.1, Sampling procedures for inspection by attributes - Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 2829, Sampling procedures and tables for periodic inspection by attributes (apply to inspection of process stability)

GB 4706.1, Household and similar electrical appliances - Safety Part 1: General requirements

GB/T 22090-2008, Cold and hot water dispenser QB/T 4098-2010, Household and similar instantaneous heating water dispenser

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T keeping mode shall meet specified requirements simultaneously. Comprehensive value of heating efficiency (or cooling efficiency), standby mode power and power consumption for warm keeping mode of combined mode water dispenser shall meet specified requirements.

3.8 evaluating values of energy conservation for water dispenser The minimum value of energy efficiency for water dispenser that is allowed by energy-saving product in specified test environment.

4 Product classifications

4.1 According to difference between heating system mode, cooling system mode and combined mode, water dispenser is classified into three categories.

4.2 Acyclic heating mode water dispenser includes external heating mode water dispenser and instantaneous-heating water dispenser.

4.3 Cyclical heating (cooling) mode water dispenser includes cyclical heating mode water dispenser, compressor cooling mode water dispenser and electronic cooling water dispenser.

4.4 Combined mode water dispenser includes water dispenser that is combined with heating and cooling systems.

5.1 Basic requirements

5.1.1 Safety requirements for water dispenser shall comply with provisions of GB 4706.1.

5.1.2 In specified test environment, hot water temperature of external heating mode water dispenser shall not be lower than 95°C; hot water temperature of instantaneous-heating

water dispenser shall not be lower than 90°C; hot (cold) water outlet temperature of cyclical heating (cooling) mode water dispenser shall meet requirements of GB/T 22090-2008.

5.2 Energy efficiency grades Energy efficiency grades for water dispenser are divided into three grades, of which grade-1 is the highest. Energy efficiency for heating and standby mode power of acyclic heating mode water dispenser shall comply with provisions of Table 1. Energy efficiency of t - duration of measurement, in hours (h). NOTE: Standby mode power is represented in W, to the nearest of 0.1W. Result is rounded off.

6.1.3 Calculation method for comprehensive value of energy efficiency grades for combined code water dispenser:

6.1.3.1 For combined mode water dispenser, respectively test two functions: cyclical heating (cooling) and acyclic heating. According to specified values in Table 1 and Table 2, determine its energy efficiency grade and correspond values separately: 5 points for grade-1, 3 points for grade-2 and 1 point for grade-3.

6.1.3.2 Comprehensive value of combined mode water dispenser is the sum of calculated values under two working conditions. Calculate method is according to formula (3). Where, S - comprehensive value; S1 - value corresponding to energy efficiency grade of cyclical heating (or acyclic heating); S2 - value corresponding to energy efficiency grade of cyclical cooling.

6.2 Test conditions and methods for water dispenser are in accordance with provisions of Annex A.

7.1 Exit-factory inspection

7.1.1 Inspection plan is in accordance with GB/T 2828.1 and GB/T 2829; It is decided by inspection department of manufacturer.

7.1.2 Products that minimum allowable values of energy efficiency are inspected as failed to meet requirements in

5.3 are not allowed to exit factory.

7.2 Type inspection

7.2.1 In one of following cases for water dispenser, type inspection for minimum allowable values of energy efficiency shall be carried out:

Annex A

(normative) Test methods A.1 Test conditions A.1.1 Laboratory A.1.1.1 Environmental parameters Ambient temperature is adjustable within 10°C~43°C. Parameters such as ambient temperature, ambient relative humidity and air flow rate are based on 2 points that

are 1m higher than the ground and 350mm from vertical centerline of two side walls of water dispenser. If many water dispensers are tested at the same time, above parameters shall be arithmetic mean of values measured at specified points of each water dispenser. A.1.1.2 Test temperature Test temperature is 25°C±2°C. A.1.1.3 Environment humidity When not specified, relative environment humidity shall be 45%~85%. A.1.1.4 Ambient air flow rate Air flow rate is not greater than 0.25m/s. A.1.1.5 Test power supply Power supply voltage is 180V~250V adjustable. Stability is ±1.5%. Frequency is 50Hz ± 1Hz. A.1.2 Preparation before test A.1.2.1 Water dispenser placement Water dispenser (placing a bucket full of water) shall be placed on a black matt wooden solid test platform. It is open under platform to allow air to circulate freely. Top surface of platform shall be 300mm higher than floor of laboratory. Platform extends outward. Extend at least 300mm from both side walls and front wall of water dispenser, but not exceeding 600mm. The rear of platform shall extend to vertical partition at back of water dispenser. of equal precision. About temperature measuring instrument, instrument resolution is not less than 0.1K and accuracy is not less than ±0.5K. A.1.3.2 Humidity measuring instrument Measurement of relative humidity uses dry-wet bulb temperature meter or other measuring devices of equal precision. Accuracy of relative humidity measuring instrument is not less than ±5%. A.1.3.3 Electrical test equipment Accuracy of electrical instruments such as ammeter, voltmeter, power meter shall not be less than level 0.5. In exit-factory inspection, accuracy is not less than level 1.0. Index value of energy meter shall be able to read 0.001kW·h. Accuracy shall not be less than level 1.0. A.1.3.4 Other test instruments Timer accuracy shall not be less than ±2s/h. Meter resolution for measuring volume shall be no less than 5mL. A.2 Test methods A.2.1 Test of hot water outlet temperature A.2.1.1 Acyclic heating mode water dispenser

a) External heating mode water dispenser: start heating system; when heating stops, immediately measure water temperature of water storage container;

b) Instantaneous-heating water dispenser: in accordance with method specified in

6.2.1 of QB/T 4098-2010. A.2.1.2 Cyclical heating mode water dispenser: in accordance with method specified in

6.2.1.1 of GB/T 22090-2008. A.2.2 Test of cold water outlet temperature Cyclical cooling mode water dispenser: in accordance with method specified in

6.2.1.1 of GB/T 22090-2008. A.2.3 Test method for power consumption for warm keeping mode Cyclical heating (cooling) mode water dispenser: in accordance with method specified in