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

GB 21519-2008

**Minimum allowable values of the energy efficiency and energy
efficiency grades for electrical storage water heaters**

储水式电热水器能效限定值及能效等级

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1 Scope

GB 21519-2008 is the Chinese national standard on minimum allowable values of the energy efficiency and energy efficiency grades for electrical storage water heaters, 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 1 April 2008 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 November 2008. 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 the minimum allowable value of energy efficiency, evaluating value of energy conservation, grade of energy efficiency, test methods and inspection rules for the domestic and similar electrical storage water heater (hereinafter referred to as electrical water heater). This Standard is applicable to the electrical storage water heater.

2 Normative References

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these

documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 20289-2006 Electrical Storage Water Heater

3 Terms and Definitions

For the purposes of this Standard, the terms and definitions given in GB/T 20289-2006 and the following apply.

3.1 Minimum allowable values of energy efficiency for electrical storage water heaters
According to the test conditions specified by the standard, the maximum 24h natural energy consumption coefficient and the minimum hot water output rate allowed by the electrical water heater.

3.2 Evaluating values of energy conservation for electrical storage water heaters heater to be tested and the tested corner or the position about 1m from the electrical water heater to be tested, whichever is smaller; and locate in half height of the electrical water heater to be tested. The ambient temperature shall be measured under the stable conditions.

c) The relative humidity shall not exceed 85%, and measured under stable conditions. It shall not be taken at the moment when the hot water is discharged from the electrical water heater.

d) It shall be carried out under the rated output power of the electrical water heater to be tested; the deviation shall not exceed $\pm 5\%$.

e) Influent temperature shall be maintained at $15^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

f) Make the electrical water heater in normal installation and use conditions. For the electrical water heater with outlet opened, turn off the water inlet valve of the electrical water heater. For the closed electrical water heater, the water pressure when the water is not drained during the test shall be stable between 0.28MPa and the rated pressure of the electrical water heater; the fluctuation is within the range of $\pm 0.05\text{MPa}$.

5.1.2 Instrument for test

a) The instrument for electrical measurement shall have an accuracy of no less than $\pm 0.5\%$;

b) The instrument for temperature measurement shall have an accuracy within 0.5K;

c) The instrument for time measurement shall have an accuracy of $\pm 1\text{s/h}$;

d) The instrument for humidity measurement shall have any accuracy of $\pm 1\%$;

e) The instrument for energy consumption measurement shall have an accuracy of 0.01kW-h.

5.1.3 Installation of electrical water heater The electrical water heater to be tested shall be

installed in accordance with the instruments provided by the manufacturer. If the accessory is attached to the machine. When installing, the accessory attached to the machine shall be used and install the accessory. The wall-mounted electrical water heater shall be installed in the space of the obstacle-free or partition wall or partition plate of the test corner wall. The partition wall or partition plate shall be at least 150mm from the wall; at least 250mm distance from the top and bottom; and at least 700mm space shall be left from the front and two sides. The electrical water heater used on the ground shall be installed on the floor; or installed on a similar floor or bracket for the benefit of the test; it shall be as close to the two side walls of the test corner wall. The flush-mounted electrical water heater shall be installed in place according to the manufacturer's instructions. Installation of the inlet and outlet pipes: connect the necessary accessories (such as safety valves, etc.) according to the manufacturer's instructions. The connecting pipes and valves that are not provided by the manufacturer shall use the non-metal parts; if the metal parts are used, certain insulation measures need to be added (equivalent to non-metallic pipe materials).

5.2 Test method for capacity The electrical water heater to be tested shall be filled with water in the manner of normal use (for the closed electrical water heater, the specified water pressure shall be applied); The mass of the electrical water heater without water shall be subtracted from the mass of electrical water heater filled with water; and the result shall be divided by the density of water at the measured temperature to obtain the actually-measured capacity, C , of the electrical water heater, in L; accurate to 0.1L.

5.3.1.1 For container with good heat transmissivity

a) Selection of single container test points Before the test, the appropriate hole is pre-punched at the position of the test point of the container; clean up; so that it shall not affect the temperature measurement effect. The thermocouple is tightly attached to the outer surface of the container; each electrical water heater to be tested is placed with a 5-point thermocouple; as shown in Figures 1 and 2. After the arrangement is completed, use the materials with equivalently original insulation effect to fill and prevent the heat dissipation.

b) Selection of double container test points The two containers of the double container shall select and arrange the test points as per