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**Maximum allowable values of the energy consumption, water
consumption and grades for electric washing machines and
washer-dryers**

电动洗衣机和洗干一体机能效水效限定值及等级

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1 Scope

This document specifies the grades of energy and water efficiency, the technical

requirements and the test methods for household and similar electric washing machines (hereafter "washing machines") and washer-dryers.

It applies to electric washing machines and washer-dryers with a rated washing capacity per drum (tub) of not more than 25.0 kg and a single-phase rated voltage of not more than 250 V, used by non-professionals in homes, shops, schools and similar places. For impeller washer-dryers, and for drum washer-dryers with a rated drying capacity per drum of not more than 1.0 kg, only the washing function is assessed.

It does not apply to washing machines without a spinning function, to washing machines and washer-dryers without a programme or function for washing cotton fabrics, or to special-purpose washing machines, washer-dryers and dry-cleaning machines used by professionals.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through normative reference in the text. For dated references, only the edition corresponding to that date applies. For undated references, the latest edition, including all amendments, applies.

GB/T 411 Cotton printed and dyed fabrics · GB/T 4288 Household and similar electric washing machines · GB/T 23118 Tumble dryers and washer-dryers for household and similar use · GB/T 23119 Household and similar electrical appliances - Water for performance testing

3 Terms and definitions

The terms and definitions given in GB/T 4288 and GB/T 23118, together with the following, apply to this document.

electric washing machine: appliance driven by electrical energy that washes clothes by mechanical action. Note: by washing method, electric washing machines are divided into impeller washing machines (the load is wholly or partly immersed in the wash water and washed by an impeller turning continuously or reversing on a timer; this includes fully automatic impeller machines and twin-tub machines), drum washing machines (the load is placed in a drum, partly immersed in water, and washed by the drum turning continuously or reversing on a timer) and agitator washing machines (the load is wholly or partly immersed in the wash water and washed by the reciprocating movement of an agitator blade).

mini washing machine: electric washing machine with a rated washing capacity per drum (tub) of not more than 2.0 kg.

washer-dryer: appliance that washes, spins and dries fabrics, with all three functions

performed in a single drum (tub).

standard washing programme: complete washing programme able to wash normally soiled cotton clothes within one cycle, comprising washing, rinsing and spinning. Note: it is one of the preset programmes, declared by the manufacturer in the instructions for use, selected in the same way as the other preset programmes and clearly identifiable by the user; it is displayed on the appliance's control panel unless programme selection is only possible over a network connection.

standard wash-dry combined programme: complete programme by which a washer-dryer washes and dries normally soiled cotton clothes, comprising washing, rinsing, spinning and drying. Note: the programme is continuous, without interruption or additional action by the operator; where the washer-dryer offers no continuous wash-and-dry programme, the standard washing programme and the drying programme are combined, the drying programme being started within 2 min of the end of the washing cycle with no manual operation other than its selection.

rated capacity: maximum mass of dry standard cotton fabric that the manufacturer declares can be treated in one operation, in kilograms (kg). Note: according to the functions of the product, the declared rated capacity is divided into rated washing capacity, rated drying capacity and so on; it is expressed in steps of 0.5 kg at or above 1 kg and of 0.1 kg below 1 kg, and for multi-drum (tub) products it may be the sum of the capacities of the individual drums (tubs).

full load: test load for one standard washing programme or standard wash-dry combined programme whose target mass is the rated washing capacity or the rated drying capacity of the machine under test.

half load: test load for one standard washing programme whose target mass is 50 % of the rated washing capacity of the machine under test.

energy consumption: weighted average of the electricity consumed in completing the standard washing programme at full load and at half load under the specified operating conditions, or the electricity consumed in completing the standard wash-dry combined programme at full load, including the correction for any deviation in the final moisture content, in kilowatt hours (kWh).

water consumption: weighted average of the water consumed in completing the standard washing programme at full load and at half load under the specified operating conditions, or the water consumed in completing the standard wash-dry combined programme at full load, in litres (L).

programme duration: weighted average of the running times of the standard washing programme at full load and at half load under the specified operating conditions, or the running time of the standard wash-dry combined programme at full load, in minutes (min).

Note: the running time is measured from the start of the programme, excluding any delay set by the user, to its end, when the power consumption of the appliance has fallen to a steady state, no function is being performed and the user can take out the load.

energy consumption per kilogram: weighted average of the energy consumption per unit capacity of one standard washing programme at full load and at half load under the specified operating conditions, or that of the standard wash-dry combined programme at full load, in kilowatt hours per kilogram (kWh/kg).

water consumption per kilogram: weighted average of the water consumption per unit capacity of one standard washing programme at full load and at half load under the specified operating conditions, or that of the standard wash-dry combined programme at full load, in litres per kilogram (L/kg).

4 Grades of energy and water efficiency

General: washing machines and washer-dryers are graded for energy and water efficiency on five levels, grade 1 being the highest. Multi-drum (tub) products meet the requirements for washing machines or for washer-dryers separately, according to the washing method, the mode of operation and the functions each drum (tub) can perform.

Mini washing machines (Table 1): grade 1 requires an energy consumption per kilogram of not more than 0.110 kWh/kg and a water consumption per kilogram of not more than 12.0 L/kg; grade 2, 0.150 kWh/kg and 20.0 L/kg; grade 3, 0.200 kWh/kg and 28.0 L/kg; grade 4, 0.270 kWh/kg and 32.0 L/kg; grade 5, 0.350 kWh/kg and 36.0 L/kg.

Drum washing machines other than mini machines (Table 2): grade 1 requires not more than 0.080 kWh/kg and 8.0 L/kg; grade 2, 0.090 kWh/kg and 9.0 L/kg; grade 3, 0.110 kWh/kg and 10.0 L/kg; grade 4, 0.130 kWh/kg and 11.0 L/kg; grade 5, 0.150 kWh/kg and 13.0 L/kg.

Impeller and agitator washing machines other than mini machines (Table 3): grade 1 requires not more than 0.010 kWh/kg and 15.0 L/kg; grade 2, 0.013 kWh/kg and 18.0 L/kg; grade 3, 0.016 kWh/kg and 21.0 L/kg; grade 4, 0.020 kWh/kg and 24.0 L/kg; grade 5, 0.024 kWh/kg and 27.0 L/kg.

Washer-dryers: on the standard washing programme they meet the grades of 4.2; on the standard wash-dry combined programme (Table 4) grade 1 requires not more than 0.400 kWh/kg and 9.0 L/kg; grade 2, 0.670 kWh/kg and 13.0 L/kg; grade 3, 0.790 kWh/kg and 17.0 L/kg; grade 4, 0.910 kWh/kg and 21.0 L/kg; grade 5, 1.200 kWh/kg and 35.0 L/kg.

5 Technical requirements

Maximum allowable values: for the standard washing programme the maximum allowable values of energy and water efficiency are the grade 5 figures of Tables 1, 2 and 3 according