GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 91.060

Y 71

GB 28378-2019

Replacing GB 28378-2012

Minimum Allowable Values of Water Efficiency and Water Efficiency Grades for Showers

淋浴器水效限定值及水效等级

Issued on: December 31, 2019 **Implemented on: July 01, 2020**

Issued by: State Administration for Market Regulation;
Standardization Administration of PRC.

Table of Contents

Minimum Allowable Values of Water Efficiency and Water Efficiency Grades for Showers

1 Scope

This Standard specifies the water efficiency grade, technical requirements and test methods of showers.

This Standard is applicable to the water efficiency evaluation for the showers (including sprinkler or sprinkler combinations) that is used in the shower room and other sanitary facilities, and that is installed at the end of the cold and hot water supply pipelines in the building, with a nominal pressure (static pressure) no greater than 1.0MPa, and medium temperature of 4°C ~90°C.

This Standard is not applicable to showers with their own heating device and thermostatic showers.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 33733 Terminology and Classification for the Kitchen and Sanitary Ware Fittings

3 Terms and Definitions

For the purpose of this document, the terms and definitions given in GB/T 33733 and the following apply.

3.1 Uniformity of flow; Δ*F*

Under different test pressures, the difference between the highest average flowrate and the lowest average flowrate of the hand-held sprinkler for the shower.

3.2 Minimum allowable values of water efficiency for showers

Test according to Appendix A, the average spray force of the hand-held sprinkler shall be no less than 0.85N.

NOTE: If the sprinkler has multiple water outlet methods, take the maximum average spray force.

5.3 Uniformity of flow

Test according to Appendix A, the maximum water flow uniformity of the hand-held sprinkler for the shower shall be no greater than 4.0 L/min.

5.4 Minimum allowable values of water efficiency for showers

The minimum allowable values of water efficiency for showers indicate Grade-3 water efficiency.

5.5 Evaluating values of water conservation for showers

The evaluating values of water conservation for the showers indicate Grade-2 water efficiency.

6 Test Methods

The test methods for spray force, flowrate and uniformity of flow for showers shall be implemented in accordance with Appendix A.

A.1.2 Spray force test procedures

The spray force test is carried out according to the following procedures:

a) The hand-held sprinkler and its accessories (such as shower valve, water-separating switch, straight pipe/elbow shower column or shower hose, etc.) shall be assembled according to the assembly method provided by the manufacturer;

b) For the hand-held sprinkler with various water outlet methods, adjust it to the maximum spray force for test;

c) Install the hand-held sprinkler on the test bench, and connect the water to the hand-held sprinkler water inlet (for the hand-held shower connected to the hose, install it on the test bench so that the hose hangs freely in a U shape, no distortion, hand-held sprinkler panel is horizontal);

d) The spray sphere is installed on the spray force measuring device;

e) Check whether the vertical axis of the spray force measuring device is perpendicular to the horizontal plane;

f) Adjust the hand-held sprinkler water outlet panel so that it is placed horizontally, and the vertical distance between it and the spray spherical dome is 400mm~405mm;

g) Pass water to the hand-held sprinkler and gradually adjust the dynamic pressure to (0.50±0.01) MPa through the pressure regulating device, and keep the dynamic pressure stable for at least 60s;

h) Turn off the water flow; and then gradually turn on the water flow to adjust the pressure to (0.30±0.01) MPa; and then read the reading P_1 of the spray force test device after maintaining stability (at least stable for 10s);

i) Repeat Procedure h), the pressure drops to (0.20±0.01) MPa and (0.10±0.01) MPa; and read P_2 and P_3;

j) Calculate the average value of P_1, P_2 and P_3 as the average spray force.

A.2 Flowrate test

A.2.1 Flowrate test device

A.2.1.1 Water supply device

The water supply device shall include:

a) A pressure regulating device that can continuously maintain the pressure required by the standard;

A.2.3 Flowrate test procedures

The flowrate test of various showers is carried out according to the following procedures:

a) Single handle dual control shower

Connect the shower to the test device according to Figure A.2; turn the handle to the maximum position of cold and hot water and to the position of the maximum flowrate of mixed water respectively; record the flowrate when the flowrate is stable at each position; and take the maximum value of the flowrate.

b) Double handle double control shower

Connect the shower to the test device according to Figure A.2; turn the handle to the maximum position of cold and hot water and turn the hot and cold water to the maximum position at the same time; record the flowrate when the flowrate is stable at each position; and take the maximum value of the flowrate.

c) Single handle single control shower

Connect the shower to the test device according to Figure A.2; turn the handle to the maximum flowrate at the water outlet position; and record the flowrate when the flowrate is stable.

A.3 Flowrate uniformity test

A.3.1 Flowrate uniformity test device

The flowrate uniformity test device shall meet the requirements of A.2.1.

A.3.2 Flowrate uniformity test procedures

A.3.2.1 Connect the shower to the test device according to Figure A.2.

A.3.2.2 Adjust the water inlet pressure to a dynamic pressure of 0.50 MPa; and after turning-on for 1 min, successively adjust to the dynamic pressure (0.30 ± 0.01) MPa, (0.20 ± 0.01) MPa and (0.10 ± 0.01) MPa, each test 3 times; record the flowrate when the flowrate is stable under each pressure; respectively calculate the average value; and calculate the difference between the maximum average flowrate and the minimum average flowrate.

A.3.2.3 The pressure is tested in turn from high to low, and the test process is as follows:

a) The flowrates of the 3 tests at (0.30±0.01) MPa are f_{11}, f_{12}, and f_{13}, and the average value is $F_1=(f_{11}+f_{12}+f_{13})/3$;

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------