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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 5135.3-2025

Replacing GB 5135.3-2003

Automatic sprinkler system - Part 3:Water spray nozzle

自动喷水灭火系统 第3部分:水雾喷头

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1 Scope

GB 5135.3-2025 is the Chinese national standard on automatic sprinkler system - part 3:water spray nozzle, in the field of environment and health protection, safety. 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 31 October 2025 by the State Administration for Market Regulation; Standardization Administration of China, and takes effect on 1 November 2026. Classification: ICS 13.220.10, CCS C84. 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 document defines the terms and definitions of water spray nozzles of the automatic sprinkler system, specifies the classification and model designation, requirements, inspection rules, instructions for use, packaging, transportation, and storage, and describes the corresponding test methods. This document applies to the design, manufacture, and inspection of water sprays nozzles of the automatic sprinkler system.

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 5135.1, Automatic sprinkler system - Part

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 water spray nozzle A nozzle that, under certain pressure, atomizes water into droplets with a diameter of less than 1 mm within a set area and sprays them out in the designed spray pattern.

3.2 spray angle The apex angle of the cone-shaped spray formed by the water mist discharged from a water spray nozzle, expanding around the nozzle's central axis.

3.3 centrifugal spray Fine droplets formed by pressured water after entering the nozzle under the action of a centrifugal element.

3.4 impact spray Fine droplets formed by pressurized water colliding with a deflector.

3.5 effective range Horizontal distance, when the nozzle sprays horizontally, between the highest point reached by the water mist and the plane perpendicular to the nozzle axis at the orifice.

3.6 horizontal spray maximal height Vertical distance, when the nozzle sprays horizontally,

between the highest point reached by the water mist and the nozzle axis.

3.7 characteristic diameter of droplet volume percentage DV

0.90 In the total volume of the spray liquid, droplets with a diameter less than this amount account for 90% of the volume.

4.1.1 Classification by atomization method

4.1.1.1 Type A water spray nozzle Centrifugal spray nozzle with the inlet and outlet arranged at a certain angle.

4.1.1.2 Type B water spray nozzle Centrifugal spray nozzle with the inlet and outlet aligned in a straight line.

4.1.1.3 Type C water spray nozzle Impact spray nozzle in which the water flow strikes a deflector or a spiral cone.

4.1.2 Classification by whether or not there is an action release component

4.1.2.1 Open-type water spray nozzle Water spray nozzle without release components.

4.1.2.2 Closed-type water spray nozzle Water spray nozzle with release components.

4.2 Model designation The model designation method for water spray nozzles shall comply with the following regulations. Example 1.ZSTW A 40/120 indicates a type A open-type water spray nozzle, with nominal flow coefficient of 40, and spray angle of 120°. Example 2.ZSTW B 30/150/68 °C indicates a type B closed-type water spray nozzle, with nominal flow coefficient of 30, spray angle of 150°, and nominal operating temperature of 68 °C.

5.1 Overall requirements

5.1.1 The water spray nozzle shall not be adjustable, disassembled, or reinstalled in its design and manufacturing.

5.1.2 A filter assembly or filter screen shall be installed at the inlet of a water spray nozzle of centrifugal spray, and the maximum pore size of the filter shall not be greater than 80% of the minimum flow diameter.

5.1.3 Rubber seals shall not be used for sealing the outlet of closed-type water spray nozzles.

5.1.4 The mass of each water spray nozzle measured according to the method specified in

6.1.2 shall not deviate from the manufacturer's declared mass by more than 5%.

5.2 Appearance and markings

5.2.1 The water spray nozzle shall be free from processing defects and mechanical

damage, and the surface coating or plating shall be uniform and complete, without obvious dents, scratches or deformation.

5.2.2 Water spray nozzles shall be permanently marked in a conspicuous location, and the markings shall include at least the specifications, manufacturer's code or trademark, and year of manufacture. All markings shall be correct, clear, and secure.

5.3 Interface threads The interface threads of the water spray nozzle shall comply with the provisions of GB/T 7306.2.

5.4 Flow coefficient Tested according to the method specified in 6.2, there shall be no pressure oscillation during the pressurization and depressurization process, and the difference between the flow coefficient and the nominal value at each pressure point shall not exceed ±5% of the nominal value.

5.5 Spray angle Tested according to the method specified in 6.3, the allowable tolerance for the spray angle is ±5° when the spray angle of the water spray nozzle is less than 100°, and ±10° when the spray angle is greater than or equal to 100°.

Note. Water spray nozzles commonly come in five spray angles. 45°, 60°, 90°, 120°, and 150°.

5.6 Water distribution performance Tested according to the method specified in 6.4, the area with a water spraying density less than 50% of the average shall be less than 10%.

5.7 Droplet size Tested according to the method specified in 6.5, the characteristic diameter of droplet volume percentage, DV0.90, shall be less than

5.8 Spray performance Tested according to the method specified in 6.6, the difference between the effective range and horizontal spray maximal height of the water spray nozzle and the manufacturer's published values shall not exceed ±10% of the manufacturer's published values; the maximum difference between the spray pattern of the water spray nozzle and the manufacturer's published values shall not exceed ±10% of the manufacturer's published values.

5.9 Nozzle strength Tested according to the method specified in 6.7, none of the components of the water spray nozzle shall be loose, detached, or damaged.

5.10.1 Resistance to ammonia stress corrosion

5.10.1.1 Tested according to the method specified in 6.8, the copper alloy components of the water spray nozzle shall not break, delaminate or be damaged.

5.10.1.2 After the above tests, carry out a strength test on the water spray nozzle, where the results shall comply with the provisions of 5.9.