



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

GB 50151-2021

**Code for installation and acceptance of foam extinguishing
systems**

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1 General

1.0.1 This standard is formulated in order to reasonably design the foam fire extinguishing system, ensure its construction quality and use function, reduce fire hazards, and protect personal and property safety.

1.0.2 This standard is applicable to the design, construction, acceptance and maintenance management of foam fire extinguishing systems installed in new construction, reconstruction and expansion projects.

This standard does not apply to foam fire extinguishing systems installed in ships, offshore oil platforms and other places.

1.0.3 The foam fire extinguishing system should not be used in places containing the following substances.

1 Nitrocellulose, explosives and other chemical substances and strong oxidants that can still be oxidized rapidly in an air-free environment;

2 Potassium, sodium, alkylaluminum, phosphorus pentoxide and other active metals and chemical substances that react dangerously with water.

1.0.4 The air foam fire extinguishing system should not be used for low-boiling flammable liquid storage tanks with a boiling point lower than 45°C and a molar percentage of carbon 5 and below components not less than 30%.

1.0.5 The design, construction, acceptance and maintenance management of the foam fire extinguishing system shall not only implement the provisions of this standard, but also comply with the relevant current national standards.

2 terms

I General terms

2.0.1 Foam concentrate

A concentrated liquid that can be mixed with water in suitable mixing ratios to form a foam solution.

2.0.2 Foam solution

A foam solution prepared by mixing foam liquid and water in a specific mixing ratio.

2.0.3 Premixed foam solution

The foam solution and water are pre-configured according to a specific mixing ratio to store the foam solution for use.

2.0.4 Mixing ratio concentration

The volume percentage of the foam liquid in the foam mixture.

2.0.5 Foam expansion ratio

The ratio of the foam volume to the volume of the foam mixture that forms the foam.

2.0.6 Low-expansion foam

Fire extinguishing foam with expansion ratio lower than 20.

2.0.7 medium-expansion foam

Fire extinguishing foam with expansion ratio between 20 and 200.

2.0.8 high-expansion foam

Fire extinguishing foam with an expansion ratio higher than 200.

2.0.9 supply intensity application rate (density)

The supply volume of foam mixture or water per unit area per unit time, expressed in "L/(min.m²)".

2.0.10 fixed system fixed system

A fire extinguishing system consisting of a fixed foam fire pump, a foam proportional mixer (device), a foam generator (or sprinkler) and pipelines.

2.0.11 semi-fixed system semi-fixed system

A fire extinguishing system consisting of a fixed foam generator and some connecting pipes, a foam fire truck or a mobile fire pump, a foam proportional mixer, and a water belt connection.

2.0.12 mobile system mobile system

A fire extinguishing system consisting of a fire engine, a motorized fire pump or a pressurized water source, a foam proportional mixer, a foam gun, a foam cannon or a mobile foam generator, and a water hose.

2.0.13 balanced pressure proportional mixing device balanced pressure proportioning set

A separate foam liquid pump injects foam liquid into the pressure water flow according to the set pressure difference, and passes through a balance valve, an orifice or a Venturi tube (or a combination of an orifice plate and a Venturi tube), and it can be used at a certain water pressure and flow rate. A proportional mixing device that automatically controls the mixing ratio within a certain range.

2.0.14 Mechanical pump-in proportional mixing device coupled water-turbinedriven pump proportioning set

The blade-type or turbine-type water turbine is connected to the foam liquid pump through a coupling, and the pressure water supplied by the foam fire-fighting water pump drives the water turbine, so that the foam liquid pump injects foam liquid into the foam fire-fighting water pipeline behind the water turbine according to the set ratio. proportional mixing device.

2.0.15 pump direct injection proportioning

The foam liquid pump directly injects the foam liquid into the system water flow according to the set ratio and mixes the process.

2.0.16 bladder pressure proportional mixing device bladder pressure proportioning tank

The pressure water discharges the foam liquid from the capsule of the closed storage tank by means of an orifice plate or a Venturi tube, and mixes it with water in proportion.

2.0.17 in-line eductor

Venturi fitting installed in the water supply line to the foam generator.

2.0.18 Air-aspirating discharge device

Using the Venturi tube principle, air is sucked into the foam mixture and mixed to generate foam, and then the foam is sprayed out in a specific pattern, such as foam generators, foam guns, foam guns, foam sprayers, etc.

2.0.19 Non air-aspirating discharge device

There is no air suction mouth, using foam mixtures such as water film forming, and its spray mode is similar to water spraying devices, such as water guns, water cannons, sprinklers, etc.

2.0.20 Foam system water supply pump

Firefighting pumps for supplying water to foam fire suppression systems.

2.0.21 Foam concentrate supply pump

A pump that supplies foam liquid to a foam fire extinguishing system.

2.0.22 Foam system pump station

Place where foam fire pumps are installed.

2.0.23 foam station

There is no foam fire pump, and only foam proportional mixing devices, foam liquid storage tanks, etc. are installed.

II Terminology of low expansion foam fire extinguishing system

2.0.24 Surface application system of liquid injection system

The foam is sprayed from the liquid surface into the fire extinguishing system in the protected storage tank.

2.0.25 subsurface injection system

The foam is sprayed from below the liquid surface into the fire suppression system inside the protected storage tank.

2.0.26 Vertical foam generator foam maker in standing position

A foam generator installed vertically on the tank wall of Class A, B, and C liquid vertical storage tanks.