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

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**Fire protection standard for engineering design of fine chemical
enterprise**

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1 General

1.0.1 This standard is formulated to standardize the fire protection design of fine chemical enterprises, prevent and reduce fire hazards, and ensure personal and property safety.

1.0.2 This standard applies to the total volume of liquefied hydrocarbon storage tanks in tank farms not exceeding 300m³, the volume of a single tank not exceeding 100m³, the total volume of Class A, B and B liquid storage tanks not exceeding 5000m³, and the volume of a single tank not exceeding Fire protection design for new construction, expansion and reconstruction projects of fine chemical enterprises with a total storage tank volume of no more than 25,000m³, a single tank volume of no more than 5,000m³, a total volume of combustible gas storage tanks of no more than 5,000m³, and a single tank volume of no more than 1,000m³.

1.0.3 The fire protection design of fine chemical enterprise engineering should follow the relevant national guidelines and policies, and on the basis of constantly summarizing production, construction and scientific experiments, adopt new technology, new materials and new equipment to achieve safety, application, advanced technology, and economical rationality.

1.0.4 In addition to implementing this standard, the fire protection design of fine chemical enterprises shall also comply with the current relevant national standards.

2.0.1 fine chemical enterprise

Use primary or secondary chemicals and biomass materials produced by the basic chemical industry as starting materials for deep processing to produce fine chemical products with specific functions, specific uses, small batches, multiple varieties, high added value, and technology-intensive factory.

2.0.2 production facilities production facilities

The process equipment required to complete the production process (product production), including production equipment, workshops, auxiliary equipment and various supporting facilities.

2.0.3 process system

A system consisting of process equipment such as reactors, towers, heat exchangers, containers, heat transfer oil furnaces, pumps, pipelines and control instruments.

2.0.4 Overall major facilities

In the event of a fire, buildings and facilities such as office, control, laboratory, power transformation and distribution, fire pump room (station), and enterprise fire station that may cause heavy casualties or property losses.

2.0.5 enclosed industrial building

With a roof, all or part of the building adopts an evenly distributed enclosure of closed walls (including doors and windows), occupying an area exceeding 1/2 of the surface area of the building's enclosure (excluding the area of the roof) or Productive buildings whose perimeter exceeds 1/2 of the perimeter of the building's outer enclosure, or where functional rooms with partially enclosed enclosures on any floor occupy an area exceeding 1/2 of the floor area.

2.0.6 Semi-enclosed industrial building

There is a roof, and evenly distributed closed wall (including doors, windows) enclosure structure is used in part of the building, and the occupied area does not exceed 1/2 of the surface area of the building enclosure (excluding the area of the roof) or all The perimeter does not exceed 1/2 of the perimeter of the building's outer enclosure, or the area occupied by functional rooms with partially enclosed enclosures on any floor does not exceed 1/2 of the floor area and is larger than the floor area 5% of productive buildings.

2.0.7 open industrial building

A productive building with a roof, no building envelope or a partial closed envelope on any floor, occupying an area not exceeding 5% of the floor area.

2.0.8 joint building

According to the characteristic requirements of craft production, the complex building is arranged adjacent to the functional places such as production, storage, utility and auxiliary.

2.0.9 Workshop storage tanks (groups) storage tanks within production workshop

In the normal production process, storage tanks (groups) that do not directly participate in the process, but process requirements, need to be arranged in or on the edge of the production facility in order to balance production, product quality inspection, or one-time input, do not include containers in the process.

2.0.10 Non-electrical equipment non-electrical equipment

Equipment that does not contain electrical components and is capable of causing an explosion due to a non-electrical potential ignition source when used in an explosive atmosphere.

2.0.11 protection air lock

It is equipped with positive pressure air supply and separated by a fireproof partition wall, which can prevent the spread of fire, buffer the explosion shock wave and limit the use space of explosive substances.

3 Fire Hazard Classification

3.0.1 The fire hazard classification of production and storage items shall comply with the provisions of the current national standard "Code for Fire Protection Design of Buildings" GB 50016. The fire hazard classification of liquefied hydrocarbons and flammable liquids shall comply with the provisions of the current national standard GB 50160 "Standards for Fire Prevention in Design of Petrochemical Enterprises".

3.0.2 When different fire hazards are produced or stored in factories or warehouses, the fire hazard categories of factories or warehouses shall be implemented in accordance with the current national standard "Code for Fire Protection Design of Buildings" GB 50016.

4.1.1 The site selection shall comply with the requirements of the local urban and rural overall planning.

4.1.2 The site of the plant shall be reasonably determined according to the characteristics of the enterprise, adjacent enterprises or facilities and the fire hazard category, combined with natural conditions such as wind direction and topography.

4.1.3 The site of the enterprise that emits harmful substances should be located on the

upwind side of the annual minimum frequency wind direction in adjacent residential areas or towns, and should not be located in the windy area. Enterprises with higher cleanliness requirements should be located on the windward side of the maximum frequency wind direction or on the downwind side of the minimum frequency wind direction throughout the year when they cannot stay away from areas with severe air pollution.

4.1.4 Regional flood drainage ditches should not pass through the factory production area.

4.1.5 The fire separation distance between fine chemical enterprises and adjacent factories or facilities shall not be less than those specified in Table 4.1.5.

Note. 1 Residential areas, villages and towns refer to those with 1,000 people or 300 households or more; the distance between residential areas, villages and towns and public buildings shall comply with the current relevant national standards in addition to complying with this regulation.

Note. The transportation roads for raw materials and products should be arranged outside the explosion-hazardous area

4.3.3 The layout of fire lanes in the factory shall meet the following requirements.

1 The setting of fire lanes for high-rise factory buildings, Class A, B and C factory buildings or production facilities, Class B and C warehouses, flammable liquid tank farms, liquefied hydrocarbon tank farms and flammable gas tank farms shall comply with the current national standard "Code for Fire Protection Design of Buildings" The provisions of GB 50016;

2 The width of the main fire vehicle road surface shall not be less than 6m, the clearance height on the road surface shall not be less than 5m, and the turning radius of the inner edge of the road surface shall meet the requirements of the fire vehicle turning radius

5.1 General provisions

5.1.1 The process system design for using or producing Category A and B substances shall meet the following requirements.

1 Airtight equipment should be used; when airtight conditions are not available, effective safety and environmental protection measures should be taken.

2 Nitrogen protection measures should be taken for process systems that are intermittently operated and have flammable and explosive hazards.

5.1.2 When there may be air at the top, the feed pipe of the flammable liquid container or storage tank should be connected from the lower part of the container or storage tank; if it must be connected from the upper part, it should be extended to 200mm from the bottom of