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**Design code for piping of water supply and drainage in
chemical industry**

化学工业给水排水管道设计规范

(English Translation)

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Table of Contents

- 1 General
- 2 Terms
- 3 Piping system and arrangement
 - 3.1 General provisions
 - 3.2 Piping system
 - 3.3 Piping arrangement
- 4 Ancillary structures
 - 4.1 General provisions
 - 4.2 Valve wells, fire hydrant wells
 - 4.3 Inspection well
 - 4.4 Water seal well
 - 4.5 Drop wells
 - 4.6 Gullies
 - 4.7 Inverted siphon
 - 4.8 Water outlet
- 5 Hydraulic Calculations

1 General

1.0.1

This specification is formulated in order to standardize the engineering design of water supply and drainage pipelines in the chemical industry, improve the quality of engineering design, and achieve comprehensive planning, reasonable layout, advanced technology, and reasonable economy.

1.0.2

This code is applicable to the engineering design of water supply and drainage pipelines for new construction, expansion or reconstruction in the chemical industry.

1.0.3

The design of water supply and drainage pipelines in the chemical industry shall not only comply with this code, but also comply with the current relevant national standards.

2.0.1 Piping system

A group of pipes connected by multiple pipes divided by fluid and design conditions.

2.0.2 Launder flume

In order to maintain the stability of the flow state and avoid the eddy current caused by the change of the cross section of the water flow, the arc-shaped water tank is set inside the inspection well.

2.0.3 Covered depth

The vertical distance from the buried pipe, the top of the canal to the ground surface.

2.0.4 Buried depth

The vertical distance from the buried pipe, the inner bottom of the canal to the ground surface.

2.0.5 Water hammer surge or water hammer

In the pressure pipeline, the hydraulic shock phenomenon in which the pressure rises and falls alternately due to the drastic change of the flow velocity.

2.0.6 Cathodic protection

It is an electrochemical protection method to prevent pipeline corrosion by using an external anode or DC power supply to protect the metal as a cathode.

2.0.7 Flexible joint of piping

A pipe joint that can withstand a certain amount of axial line displacement and relative angular displacement.

2.0.8 Composite pipe

The pipe wall structure is a round pipe composed of two or more materials.

3.1 General provisions

3.1.1

The division of the water supply pipeline system shall be determined according to the requirements of the device (unit) for water quality, water pressure and water temperature.

3.1.2

The division of the drainage pipeline system shall be classified according to the water quality, following the principles of separation of clean and sewage, and separation of sewage and sewage, and shall be determined according to the water quality, water volume, water pressure and whereabouts of the drainage. Different chemical plants discharge different types of sewage, and separate or combined sewage pipeline systems should be set up in accordance with the principle of easy transportation and treatment. A separate sewage pipeline system should be installed for the following sewage.

- 1 Sewage mixed with other sewage that is prone to sedimentation, aggregation or generation of refractory biodegradable substances;
- 2 Sewage containing relatively high concentrations of refractory and biotoxic substances that require targeted treatment;
- 3 Sewage containing corrosive media such as acid and alkali.

3.1.3

It is strictly forbidden to connect non-fire-fighting water pipes to independent fire-fighting water supply pipes.

3.1.4

The fire water supply system should not be combined with the circulating cooling water system.

3.1.5

The circulating cooling water pipeline should not be connected with other production water supply pipelines.

3.1.6

The reuse water system shall adopt an independent water supply pipeline.

3.1.7

The domestic drainage of the factory should adopt an independent drainage piping system.

3.1.8

Accident fire-fighting drainage pipes in polluted areas such as production units and tank farms can be installed in combination with production sewage pipes and rainwater pipes (canals) or independently, but should not pass through explosion-proof areas; when crossing cannot be avoided, protective measures should be taken.

3.1.9

The quantity and orientation of the inlet and outlet of the water supply and drainage pipes of the device (unit) shall be determined according to the pipeline layout in the device (unit)

and the layout of the water supply and drainage pipes of the whole plant.

3.1.10

The installation of sewage pipelines containing flammable liquids shall comply with the relevant provisions of the current national standard "Code for Fire Protection Design of Petrochemical Enterprises" GB 50160.

3.1.11

The setting of fire-fighting water supply pipes and their facilities shall comply with the relevant provisions of the current national standards "Code for Fire Protection Design of Petrochemical Enterprises" GB 50160 and "Code for Fire Protection Design of Buildings" GB 50016.

3.1.12

When the outlet of the gravity flow drainage pipe is supported by the flood or tidal water level of the water body, anti-backflow facilities shall be installed.

3.1.13

The drainage piping system in the plant area shall be equipped with emergency facilities to prevent accidental fire-fighting wastewater from flowing into the environment outside the plant.

3.1.14

Water hammer analysis and calculation should be carried out for pressure transmission pipelines. When the water hammer generated endangers the safety of the pipeline, measures to reduce the water hammer should be taken.

3.2 Piping system

3.2.1

When the main water supply pipe in the factory area is connected to the urban water supply pipeline or the industrial park water supply pipeline, facilities such as shut-off valves and flow meters shall be installed. When domestic water supply may cause backflow pollution, anti-backflow facilities should be installed at the pipe connection.

3.2.2

The setting of valves in the water supply pipeline system should meet the requirements of safe production and maintenance, and valves should be set in the following situations.

- 1 Connected to the pipeline of the device (unit) by the main pipe.
- 2 Segmentation and connection of two or more water pipelines.
- 3 Crossing, the upstream side of a railway or river pipeline.