

HG

**CHEMICAL INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

HG/T 20549-1998

Design Standard Piping Layout for Chemical Plant

化工装置管道布置设计规定

(English Translation)

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Design Standard - Piping Layout for Chemical Plant

HG/T 20549-1998

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1.1 Composition and brief description of piping layout design documents

1.1.1

Composition of piping layout design documents

The main documents of piping layout design for chemical plants are:

- 1 List of design documents;
- 2 Design description;
- 3 Piping layout drawings;
- 4 Piping isometric drawings and their index;
- 5 Pipe segment lists and their index.

1.1.2

Brief description

- 1 List of design documents

Only the finished design documents to be issued to the construction site are listed; intermediate products of the design process are not listed in the list.

- 2 Design description

Requirements are stated for matters that are not described in the finished documents, or are difficult to describe clearly in them, but which the owner or the construction organization needs to understand and implement, such as: design scope, area division of the plant, installation requirements for equipment and piping, construction acceptance standards, composition of the design documents, unified legend symbols and abbreviations, static grounding requirements.

- 3 Piping layout drawings

- 1) Piping routing drawing (initial edition for short)

It shall be completed in the basic engineering design stage. It is drawn on the basis of the PID editions "A", "B", "C", "D" of the process system discipline [see Process System Engineering Design Regulations for Chemical Plants (HG 20557~20559-93), hereinafter the same] and of the equipment layout drawing editions "A", "B", "C", "D" of the equipment layout discipline [see Design Regulations for Equipment Layout of Chemical Plants (HG 20546-92), hereinafter the same]; its content and depth requirements are given in 1.2 of this chapter.

2) Piping layout drawing

The study edition (also called detail edition 1, E edition for short, hereinafter the same), the design edition (also called detail edition 2, F edition for short, hereinafter the same) and the construction edition (G edition for short) of the piping layout drawing shall be completed in sequence in the detailed engineering design stage; they are drawn on the basis of the PID editions "E", "F", "G" of the process system discipline and of the equipment layout drawing editions "E", "F", "G" of the equipment layout discipline respectively, of which editions "E" and "F" are intermediate products and shall not be issued externally. The content and depth requirements of edition "E" are given in Chapter 2 of this standard (for the work procedure of each edition see Figure 2.0.1 "Work procedure diagram of the engineering design stages of the piping layout discipline" in "Technical Management Regulations of the Piping Layout Discipline for Chemical Plants" (HG/T 20549.3), hereinafter the same).

4 Piping isometric drawings and their index

- 1) A piping isometric drawing is a three-dimensional detail drawing showing the routing, connections, piping components and related data and materials of a single pipeline; it consists of two parts, the drawing and the material list.
- 2) The piping isometric drawing index is compiled to facilitate consulting the isometric drawings. Its content generally includes: line number, isometric drawing number, edition, area number, etc.

5 Pipe segment lists and their index

- 1) The pipe segment list is a material list of a single pipeline compiled for pipelines for which, according to the regulations, isometric drawings need not be drawn.
- 2) The function and content of the pipe segment list index are similar to those of the isometric drawing index, except that there is no isometric drawing number item.

1.2 Regulations on the content and depth of the piping routing drawing

1.2.1

Purpose

The piping routing drawing is an important document of the basic engineering design stage and the basis for the preliminary estimation of piping investment. Through this work, the equipment layout is verified and modified; the width and number of tiers of the pipe racks are considered; the main platforms are provided; compliance with fire and explosion prevention codes is checked; the feasibility of the installation and maintenance schemes is checked; and preparations are made for the piping study of the next stage. This drawing shall not be sent to the owner.

1.2.2

Basic data

- 1 Piping and instrument diagrams (PID) editions "A", "B", "C", "D";
- 2 Equipment data sheets;
- 3 Equipment layout drawings editions "A", "B", "C", "D";
- 4 Piping data sheets and special piping item data sheets;
- 5 Relevant codes.

1.2.3

Scale and drawing division

- 1 Depending on the size of the plant, 1:100 or another suitable scale may be selected.
- 2 According to the layout of the plant and the scale selected, the drawing is divided into several plan views. The division of pipe rack drawings shall comply with item 5 of 1.2.7 of this section.

1.2.4

Range of pipe sizes included in the piping routing drawing

- 1 All process piping shall be drawn; low-pressure piping with nominal diameter (DN) less than 25mm or 1 inch and branch pipes such as vents and drains need not be drawn; but control valve assemblies shall all be shown, in the manner specified in item 4 of 1.2.7 of this section.
- 2 Utility piping with nominal diameter (DN) greater than or equal to 50mm or 2 inches and all control valve assemblies shall be shown.
- 3 All piping on the pipe racks shall be shown [with space reserved according to the degree of completeness of the piping and instrument diagram (PID)].

1.2.5

The piping routing drawing shall show the following:

- 1 Outlines of vessels and heat exchangers;
- 2 Foundation outlines of rotating equipment;
- 3 Space occupied by installation and maintenance, reserved space;
- 4 Outlines of buildings and structures (including columns, walls, doors, platforms, ladders, installation openings and lifting facilities, etc.);
- 5 Instrument and electrical cable trays on the pipe racks;