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

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**Seamless steel tubes and pipes for petrochemical and chemical
facilities**

石化和化工装置用无缝钢管

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Table of Contents

Foreword	3
1 Scope	7
2 Normative references	7
3 Terms and definitions	11
4 Classification and symbols	11
5 Ordering content	12
6 Manufacturing process	12
7 Technical requirements	15
8 Specimens	32
9 Test methods	33
10 Inspection rules	35
11 Packaging, marks and quality certificate	36
Annex A (informative) Comparison of domestic and foreign steel designations	37
Annex B (normative) Plastic elongation strength specified at high temperature	38
Annex C (informative) Recommended data for 100000 h endurance strength	39
Annex D (normative) Supplementary technical requirements for crack resistance of high-quality carbon steel tubes and pipes used in H ₂ S-containing environments	41
Annex E (normative) Supplementary technical requirements for stainless-steel tubes and pipes used in industrial furnaces of petrochemical hydrogenation units	42
Bibliography	45

1 Scope

This document specifies the classification, code, ordering content, manufacturing process, technical requirements, specimens, test methods, inspection rules, packaging, marking and quality certificate of seamless steel tubes and pipes for petrochemical and chemical facilities.

This document applies to seamless steel tubes and pipes for petroleum cracking, seamless steel tubes and pipes for high-pressure fertilizer equipment, high-pressure alloy steel tubes and pipes for polyethylene, and stainless-steel seamless tubes and pipes for industrial furnaces in petrochemical hydrogenation units (hereinafter referred to as "steel tubes and pipes").

2 Normative references

GB/T 222

GB/T 223.5

GB/T 223.9

GB/T 223.11

GB/T 223.12

GB/T 223.14

GB/T 223.18

GB/T 20972.2

GB/T 30062

GB/T 31925-2015

GB/T 42673

GB/T 42677

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 30062 apply.

4 Classification and symbols

4.1 The seamless steel tubes and pipes in this document are divided into two categories according to the product manufacturing method. The categories and codes are as follows.

a) Hot-rolled (extruded, top-rolled, forged, expanded) steel tubes and pipes, with a code name as W-H;

b) Cold drawn (rolled) steel tubes and pipes, with a code name as W-C.

4.2 The following symbols apply to this document.

D. Outer diameter (unless otherwise specified, includes nominal outer diameter and/or calculated outer diameter, in millimeters).

S. Wall thickness (unless otherwise specified, includes nominal wall thickness and/or average wall thickness, in millimeters).

Sc. Average wall thickness (the average of the maximum and minimum wall thicknesses calculated based on the minimum wall thickness and its allowable deviation, in millimeters).

Smin. Minimum wall thickness. L. Length.

5 Ordering content

The contract for steel tubes and pipes ordered under this document shall include the following.

- a) Product name;
- b) Reference to this document;
- c) Steel designation or unified numerical code;
- d) Order quantity (total weight or total length);
- e) Dimensions (outer diameter x wall thickness, in millimeters);
- f) Delivery condition;
- g) Any special requirements.

6.1.1 High-quality carbon steel, low-alloy steel and alloy steel should be smelted by

electric arc furnace with external refining and vacuum refining, or oxygen converter with external refining and vacuum refining, or electroslag remelting.

6.1.2 Stainless-steel should be smelted using an electric arc furnace with external

refining, an oxygen converter with external refining, or an electroslag remelting method.

6.1.3 Other smelting methods with higher requirements may be used after consultation

between the supplier and the purchaser, if it is specified in the contract. If the purchaser specifies a particular smelting method, this should be specified in the contract.

6.2 Method for manufacturing tube and pipe billets

The tube and pipe billets can be manufactured by continuous casting, die casting or hot rolling (forging).

6.3 Manufacturing methods for steel tubes and pipes

6.3.1 High-quality carbon steel, low alloy steel and other alloy steel tubes and pipes except 35CrNi3MoV steel tubes and pipes for polyethylene should be manufactured by hot rolling (extrusion, top, expansion) or cold drawing (rolling) seamless method.

6.3.2 Stainless-steel tubes and pipes should be manufactured by hot rolling (extrusion)

or cold rolling (drawing) seamless method.

6.3.3 35CrNi3MoV steel tubes and pipes for polyethylene can be manufactured by forging round billets or rolling round billets through mechanical processing, or by hot rolling (extrusion, top) seamless method.

6.4 Delivery states

6.4.1 High-quality carbon steel, low alloy steel and alloy steel tubes and pipes should be delivered in heat-treated state.

6.4.2 Stainless-steel tubes and pipes should be delivered in a heat-treated and pickled

passivation state. Steel tubes and pipes that have been through overall grinding, boring, or heat treatment in a protective atmosphere may be delivered without pickling.

6.4.3 The heat treatment system of steel tubes and pipes shall comply with the requirements of Table 1.

7.1.1 The steel designation and chemical composition (melting composition) shall

comply with the requirements of Table 2. For a comparison of domestic and foreign steel designations, see Annex A.

c) The grain size grade of 07Cr19Ni10, 07Cr19Ni11Ti and 07Cr18Ni11Nb steel tubes and pipes should be 4~7.

7.9 Intergranular corrosion

7.9.1 Stainless-steel tubes and pipes shall be subjected to an intergranular corrosion test.

The test method shall comply with the provisions of Method E in GB/T 4334-2020.

After the test, the specimens shall show no tendency towards intergranular corrosion.

7.9.2 The purchaser may specify other corrosion test methods after consultation

between the supplier and the purchaser and after stating it in the contract.

7.10 Surface quality

7.10.1 The inner and outer surfaces of the steel tubes and pipes shall be free of cracks,