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

GB/T 12770-2025

Replacing GB/T 12770-2012

Welded stainless steel tubes for mechanical structures

机械结构用不锈钢焊接钢管

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1 Scope

GB/T 12770-2025 is the Chinese national standard on welded stainless steel tubes for mechanical structures, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 August 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2026.

Classification: ICS 77.140.75, CCS H48. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the classification and codes, order contents, manufacturing processes, technical requirements, test methods, inspection rules, packaging, marking and quality certificate for welded stainless steel tubes used for mechanical structures. This document applies to welded stainless steel tubes (hereinafter referred to as "steel tubes") used for machinery, automobiles, rail vehicles, marine engineering, oil and gas engineering, and other structural applications.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document

through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 222 Steel and Alloys - Permissible Deviations of Product Analyzed Chemical Composition

GB/T 223.4 Alloyed Steel - Determination of Manganese Content - Potentiometric or Visual Titration Method

GB/T 223.9 Iron, Steel and Alloy - Determination of Aluminum Content - Chrome Azurol S Photometric Method

GB/T 223.11 Iron, Steel and Alloy - Determination of Chromium Content - Titrimetric Method and Spectrophotometric Method

GB/T 223.18 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium Thiosulfate Separation Iodimetric Method for the Determination of Copper Content

GB/T 223.19 Methods for Chemical Analysis of Iron, Steel and Alloy - The Neocuproine-chloroform Extraction Photometric Method for the Determination of Copper Content

GB/T 223.23 Iron, Steel and Alloy - Determination of Nickel Content - The Dimethylglyoxime Spectrophotometric Method

GB/T 223.25 Methods for Chemical Analysis of Iron, Steel and Alloy - The Dimethylglyoxime Gravimetric Method for the Determination of Nickel Content

GB/T 223.26 Iron, Steel and Alloy - Determination of Molybdenum Content - The Thiocyanate Spectrophotometric Method

GB/T 4334-2020 Corrosion of Metals and Alloys - Test Methods for Intergranular Corrosion of Austenitic and Ferritic-austenitic (duplex) Stainless Steels

GB/T 7735 Automated Eddy Current Testing of Seamless and Welded (except submerged arc-welded) Steel Tubes for Detection of Imperfections

GB/T 11170 Stainless Steel - Determination of Multi-element Contents - Spark Discharge Atomic Emission Spectrometric Method (routine method)

GB/T 17395 Dimensions, Shapes, Masses and Tolerances of Steel Tubes

3 Terms, Definitions and Abbreviations

The terms and definitions defined in GB/T 30062 are applicable to this document.

4 Classification and Codes

4.1 Steel tubes are classified into three categories in accordance with their delivery condition, with the following categories and codes.

- a) Welded condition. WW;
- b) Cold-drawn (rolled) condition. WC;
- c) Heat-treated condition. T.

4.2 Steel tubes are classified into five categories in accordance with their surface condition, with the following categories and codes.

- a) Polished condition. SP;
- b) Burnished condition. SB;
- c) Shot-peened (sandblasted) condition. SS;
- d) Pickled condition. SA;
- e) Untreated condition. SNB (or no code).

4.3 Steel tubes are classified into two grades in accordance with their dimensional accuracy, with the following categories and codes.

- a) Ordinary grade. PA;
- b) High-grade. PC.

5 Order Contents

Contracts or orders for steel tubes based on this document shall include the following contents.

- a) Serial No. of this document;
- b) Product name;
- c) Steel designation or unified digital code;
- d) Dimensions (nominal outside diameter x nominal wall thickness, in millimeters) and accuracy grade;
- e) Quantity ordered (total weight or total length);
- f) Manufacturing methods of the steel tubes;
- g) Delivery condition;
- h) Surface condition;
- i) Special requirements.

6 Manufacturing Processes

6.1 Steel Smelting Method Steel shall be smelted using an electric arc furnace with ladle refining or a converter with ladle refining. Upon negotiation between the supply-side and the demand-side, and specified in the contract, other smelting methods may also be used.

6.2 Manufacturing Methods of Steel Tubes

6.2.1 Steel tubes shall be manufactured using one or more of the following welding methods. gas tungsten arc welding, plasma arc welding, submerged arc welding, high-frequency welding and laser welding. If the demand-side specifies a particular welding method, it shall be indicated in the contract.

6.2.2 When a filler metal welding method is used, the filler metal shall match the specified chemical composition of the base material; when the demand-side requires higher corrosion resistance or other properties, a higher alloy filler metal may be specified.

6.2.3 Upon negotiation between the supply-side and the demand-side, and as indicated in the contract, steel tubes with an outer diameter of not less than 508 mm may have two longitudinal weld seams or a circumferential weld seam with the same welding method as the longitudinal weld seams. When there is a circumferential weld seam, the steel tubes shall not have a cross weld seam; when there are two longitudinal weld seams, the circumferential distance between the two longitudinal weld seams shall not be less than 300 mm.

6.3 Delivery Condition

6.3.1 Steel tubes shall be delivered in the welded condition or in a heat-treated and pickled condition. Steel tubes that have undergone protective atmosphere heat treatment or overall polishing, burnishing or shot peening (sandblasting) may be delivered without pickling. Recommended heat treatment regimens for the steel tubes are shown in Table 1.

6.3.2 Upon the demand-side's request, and upon negotiation between the supply-side and the demand-side, and as indicated in the contract, the steel tubes may be delivered in a cold-drawn (rolled) condition.

6.4 Surface Condition The steel tubes shall be delivered in one of the following five surface conditions. polished, burnished, shot-peened (sandblasted), pickled and untreated.

7.1 Steel Designations and Chemical Compositions

7.1.1 The steel designations and chemical compositions (smelting analysis) shall conform to the provisions of Table