



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

GB/T 15008-2020

Welded Nickel-Iron-Chromium Alloy Pipes for Fluid Service

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1 Scope

This Standard specifies the classification, order content, size, shape, weight, technical requirements, test methods, inspection rules, packaging, marks and quality certificates of corrosion-resistant alloy bars.

This Standard is applicable to iron-nickel-based, nickel-based, and nickel-copper-based hot-rolled bars (hereinafter referred to as bars) with a nominal diameter no greater than 150mm used in corrosive media.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 223.5 Steel and Iron - Determination of Acid-Soluble Silicon and Total Silicon Content - Reduced Molybdsilicate Spectrophotometric Method

GB/T 223.8 Methods for Chemical Analysis of Iron, Steel and Alloy?The Sodium Fluoride Separation-EDTA Titration Method for the Determination of Aluminum Content

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 - Visual Titration or Potentiometric Titration Method

GB/T 223.14 Methods for Chemical Analysis of Iron, Steel and Alloy - The N-Benzoyl-N-Phenylhydroxylamine Extraction Photometric Method for the Determination of Vanadium Content

GB/T 223.17 Methods for Chemical Analysis of Iron, Steel and Alloy - The Diantipyrilmethane Photometric Method for the Determination of Titanium Content

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 223.22 Methods for Chemical Analysis of Iron, Steel and Alloy - The Nitroso-R-Salt Spectrophotometric Method for the Determination of Cobalt Content

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 223.28 Methods for Chemical Analysis of Iron, Steel and Alloy - The alpha-Benzoinoxime Gravimetric Method for the Determination of Molybdenum Content

GB/T 223.38 Methods for Chemical Analysis of Iron, Steel and Alloy - The Anion-Exchange Separation-Gravimetric Method for the Determination of Niobium Content

GB/T 223.40 Iron, Steel and Alloy - Determination of Niobium Content by the Sulphochlorophenol S Spectrophotometric Method

GB/T 223.42 Methods for Chemical Analysis of Iron, Steel and Alloy - The Anion-Exchange Separation-Bromopyrogallol Red Photometric Method for the Determination of Tantalum Content

GB/T 223.43 Iron Steel and Alloy - Determination of Tungsten Content -Gravimetric Method and Spectrophotometric Method

GB/T 223.62 Methods for Chemical Analysis of Iron, Steel and Alloy - The Butyl Acetate Extraction Photometric Method for the Determination of Phosphorus Content

GB/T 223.63 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium (Potassium) Periodate Photometric Method for the Determination of Manganese Content

GB/T 223.73 Iron Steel and Alloy - Determination of Iron Contents - Titanium Trichloride-Potassium Dichromate Titration Method

GB/T 223.75 Iron Steel and Alloy - Determination of Boron Content - Methanol Distillation-Curcumin Photometric Method

GB/T 223.79 Iron and Steel - Determination of Multi-Element Contents - X-Ray Fluorescence Spectrometry (Routine Method)

GB/T 223.85 Steel and Iron - Determination of Sulfur Content - Infrared Absorption Method after Combustion in an Induction Furnace

GB/T 223.86 Steel and Iron - Determination of Total Carbon Content - Infrared Absorption Method after Combustion in an Induction Furnace

GB/T 228.1 Metallic Materials - Tensile Testing - Part 1. Method of Test at Room YS/T 325.2 Methods for Chemical Analysis of Nickel-Copper Alloy - Part 2.

Determination of Copper Content - Electrolysis Weight Method

3.1 Corrosion-resistant alloys are classified as follows.

- a) An iron-nickel-based alloy with nickel content of 30% to 50%, and the sum of nickel content and iron content of no less than 60%;
- b) Nickel-based alloys with nickel content of no less than 50%;
- c) Nickel-copper alloy with nickel content of no less than 50%, and a sum of nickel content and copper content of no less than 90%.

3.2 Bars are divided into the following two categories according to the used processing

methods.

- a) Steel for pressure processing - UP;
- b) Steel for cutting - UC.

The used processing method of the bar material shall be specified in the contract; if not specified, it shall be the steel for cutting processing.

4 Order Content

The contract or order placed according to this Standard shall include the following.

- a) The number of this Standard;
- b) Product name;
- c) Designation (or unified digital code);
- d) The delivered weight (or quantity);
- e) specifications;
- f) Processing method (if not specified, as per cutting steel);
- g) Smelting method (see 6.2);

h) Delivery status;

i) Special requirements (see 6.8).

6.2 Smelting method Unless otherwise specified in the contract, the smelting method shall be chosen by the supplier.

6.3 Delivery status Bars shall be delivered in hot-rolled or solid-solution status; or delivered in peeling, turning, polishing status after hot-rolled or solid-solution. The specific delivery status is indicated in the contract.

6.4 Mechanical properties

6.4.1 For the bars delivered in the hot-rolled state, the mechanical properties of the sample blank after solution treatment shall comply with the provisions of Table 2.

6.4.2 For the bars delivered in solution treatment state, cut samples from the delivered bars for inspection; the mechanical properties indicators shall conform to the provisions of Tables 2 and 3. But for bars with a diameter greater than 80mm, the mechanical properties indicators are determined through negotiation between the supplier and the purchaser.

6.4.3 For aging-strengthened alloys, cut the sample blank on the bar in the delivery state; and the mechanical properties after aging treatment shall conform to the provisions of Table 3. NS4301's high-temperature endurance performance shall conform to the provisions of Table 4.

6.4.4 The diameter of the sample blank is 25mm. When the diameter of the bar is below 25mm, conduct the solution treatment on the bars with the original diameter to make a sample for inspection.

6.4.5 The performance indicators in Table 2 are applicable to bars with a diameter no greater than 80mm. Bars with a diameter greater than 80mm are allowed to be rolled (forged) to 80mm for sampling and inspection; their performance indicators shall conform to the provisions of Table 2.