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

GB/T 44148.1-2024

**Steel forgings and rolled or forged bars for pressure equipment
- Part 1: General requirements
(English Translation)**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document is Part 1 of GB/T 44148 "Steel forgings, rolled or forged steel bars for pressure equipment". GB/T 44148 has been published as follows.

Lower part.

--- Part 1: General requirements;

--- Part 2: Low alloy and alloy (molybdenum, chromium and chromium-molybdenum) steels with specified high temperature properties;

--- Part 3: Low temperature toughness nickel steels.

This document is modified from ISO 9327-1:1999 "Technical delivery conditions for steel forgings, rolled or forged bars for pressure purposes - Part 1.

General Requirements.

Compared with ISO 9327-1:1999, this document has many structural adjustments. A comparison of the structural number changes between the two documents See Appendix A for the table.

This document has many technical differences compared to ISO 9327-1:1999. The outer margins of the clauses involved are marked with vertical A single line (|) is used to indicate these technical differences. A list of these technical differences and their reasons is given in Appendix B.

For ease of use, the following editorial changes have been made to this document.

--- Deleted the reference in ISO 9327-1:1999.

Introduction

Pressure equipment usually includes boilers, pressure vessels and pressure pipes. Such equipment is widely used in various aspects of the national economy. Their common characteristics are it involves production and life safety. Once an accident occurs, the harm is great. There are many kinds of materials for manufacturing pressure equipment. Steel is the most important material in actual engineering.

The most widely used material. Steel for pressure equipment is a key raw material for the manufacture of major technical equipment and is the basis for the safe operation of pressure equipment.

As pressure equipment develops towards large-scale, high-parameter, and structural diversity, its working conditions are becoming more and more demanding.

This puts forward more stringent requirements on the materials used to manufacture pressure-bearing equipment. Reasonable selection of materials is crucial to the reasonable structure, safety and long-term operation of the equipment.

It is very important to operate and reduce costs.

GB/T 44148 "Steel forgings, rolled or forged steel bars for pressure equipment" aims to standardize the technical requirements of steel for pressure equipment.

Partial composition.

--- Part 1: General requirements. The purpose is to specify requirements common to other parts so that they can be referenced in other parts.

--- Part 2: Low alloy and alloy (molybdenum, chromium and chromium-molybdenum) steels with specified high temperature properties. The purpose is to specify the requirements for a certain temperature above room temperature.

Technical requirements for steel for pressure equipment (effective section thickness not exceeding 500mm) used under high temperatures.

--- Part 3: Low temperature toughness nickel steel. The purpose is to specify low temperature toughness nickel steel with a nominal diameter not greater than 50 mm for use in the manufacture of pressure equipment Technical requirements for ductile nickel steels.

--- Part 4: Fine-grained steel with higher yield strength. The purpose is to specify the use of steel with effective section thickness not greater than Technical requirements for 250mm fine grain steel.

--- Part 5: Stainless steel. The purpose is to specify stainless steel with an effective cross-sectional thickness not exceeding 500 mm used in the manufacture of pressure equipment Technical requirements for steel.

Steel forgings, rolled or forged steel bars for pressure equipment Part 1: General requirements

1 Scope

This document specifies the ordering content, dimensions, shape, weight, technical requirements, test methods, and specifications of steel forgings, rolled or forged steel bars for pressure equipment.

Methods, inspection rules, packaging, marking and quality certificates.

This document applies to steel forgings, rolled or forged steel bars (hereinafter referred to as steel bars or forged steel bars) for pressure equipment such as boilers, pressure vessels, and pressure pipes.

Manufacturing and acceptance of parts).

Specific requirements for steel forgings or steel bars for pressure equipment are given separately in the applicable documents of GB/T 44148 (all parts).

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 223 (all parts) Chemical analysis methods for steel and alloys GB/T 226 Acid etching test method for macrostructure and defects of steel GB/T 228.1 Tensile tests on metallic materials - Part 1: Test methods at room temperature (GB/T 228.1-2021, ISO 6892-1.

2019,MOD)

GB/T 228.2 Tensile tests on metallic materials Part 2: High temperature test methods (GB/T 228.2-2015, ISO 6892-2.

2011,MOD)

GB/T 229 Charpy pendulum impact test method for metallic materials (GB/T 229-2020, ISO 148-1:2016, MOD) GB/T 702 Dimensions, shapes, weights and tolerances of hot-rolled steel bars GB/T 908 Dimensions, shapes, weights and tolerances of forged steel bars GB/T 1979 Structural steel macrostructure defect rating chart GB/T 2101 General provisions for acceptance, packaging, marking and quality certification of steel GB/T 2975 Sampling location and specimen preparation for mechanical properties tests of steel and steel products (GB/T 2975-2018, ISO 377.

2017,MOD)

GB/T 4336 Determination of multi-element content of carbon steel and medium and low alloy steel Spark discharge atomic emission spectrometry (conventional method) GB/T 8170 Rules for rounding off values and expression and determination of limit values GB/T 11170 Determination of multi-element content of stainless steel - Spark discharge atomic emission spectrometry (conventional method) GB/T 17505 General technical requirements for delivery of steel and steel products (GB/T 17505-2016, ISO 404:2013, MOD) GB/T 20066 Sampling and preparation of samples for determination of chemical composition of steel and iron (GB/T 20066-2006, ISO 14284.

1996, IDT)

GB/T 20123 Determination of total carbon and sulfur content of steel - Infrared absorption method after combustion in a high-frequency induction furnace (conventional method) (GB/T 20123-2006,ISO 15350:2000,IDT) GB/T 20124 Determination of nitrogen content of steel - Inert gas fusion thermal conductivity method (conventional method) (GB/T 20124-2006,