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

GB/T 26648-2026

Replacing GB/T 26648-2011

Austenitic iron castings

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1 Scope

GB/T 26648-2026 is the Chinese national standard covering high-nickel austenitic cast iron - the Ni-Resist family, used where corrosion resistance, non-magnetic behaviour or a controlled expansion coefficient is needed alongside castability. It replaces GB/T 26648-2011 and has been in force since 1 September 2026. It was issued on 27 February 2026 and has been in force since 1 September 2026, replacing GB/T 26648-2011. The document is under the responsibility of the Standardization Administration of China. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document specifies the designations and technical requirements for austenitic iron castings, describes the corresponding test methods, and stipulates the rules for inspection as well as requirements for marks, quality certificates, packaging, storage, and transportation. This document applies to the manufacture of austenitic iron castings.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 223.3, Methods for chemical analysis of iron, steel and alloy -- The diantipyryl methane phosphomolybdate gravimetric method for the determination of phosphorus content

GB/T 223.4, Alloyed steel -- Determination of manganese content -- Potentiometric or visual titration 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 223.25, Methods for chemical analysis of iron, steel and alloy -- The dimethylglyoxime gravimetric method for the determination of nickel content

GB/T 223.58, Methods for chemical analysis of iron, steel and alloy -- The extraction-absorption catalytic polarographic method for the determination of manganese content

GB/T 223.60, Iron, steel and alloy -- Determination of silicon content -- Gravimetric method

GB/T 223.68, Methods for chemical analysis of iron, steel and alloy -- The potassium iodate titration method after combustion in the pipe furnace for the determination of sulfur content

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 5611 and the following apply.

3.1 austenitic cast irons A cast iron produced by melting a composition based primarily on iron, carbon, and nickel - with additions of elements such as silicon, manganese, copper, and chromium - that features a stable, predominantly austenitic matrix at room temperature.

4 Designations

The designations of austenitic cast irons shall comply with the provisions of GB/T 5612 and are classified into 12 designations, as listed in Table 1 and Table 2, respectively. Information regarding the mechanical and physical properties of austenitic iron castings is provided in Annex A. Table 1 -- Chemical composition of austenitic iron castings (designations for general engineering use) Table 2 -- Chemical composition of austenitic iron castings

(designations for special-purpose use)

5 Technical requirements

5.1 Chemical composition The chemical composition of the castings shall comply with the requirements specified in Tables 1 and

2. For castings of special-purpose designations (see Annex B), any specific requirements regarding chemical composition shall be agreed upon between the supplier and the purchaser.

5.2 Mechanical properties

5.2.1 The room-temperature mechanical properties of the casting materials shall comply with the requirements specified in Tables 3 and 4.

5.2.2 The acceptance criteria for the mechanical properties of castings shall be agreed upon by the supplier and the purchaser. Generally.

a) Tensile strength serves as the basis for acceptance for austenitic gray cast iron and QTANi30Si5Cr5;

b) Tensile strength and elongation serve as the basis for acceptance for austenitic ductile iron.

5.2.3 Where requirements exist for yield strength, impact toughness, and hardness, these may serve as the basis for acceptance, subject to agreement between the supplier and the purchaser.

5.2.4 If mechanical properties are determined using samples taken from the casting itself, the sampling location, size, and quantity, as well as the required performance indicators, shall be agreed upon by both the supplier and the purchaser. Table 3 -- Mechanical properties of austenitic iron castings (designations for general engineering use) Table 4 -- Mechanical properties of austenitic iron castings (designations for special-purpose use)

5.3 Metallographic microstructure

5.3.1 The metallographic microstructure of the castings shall comply with the following requirements.

a) The metallographic microstructure of austenitic gray cast iron consists of austenite, a small amount of grain-boundary carbides, and flake graphite. Type A graphite constitutes $\geq 70\%$, and the graphite length falls within grades 3~5.

b) The metallographic microstructure of austenitic ductile iron consists of austenite and spheroidal graphite. The spheroidization grade shall be no lower than grade 3, and the graphite size shall be within grades 5~8. A small amount of carbides is permissible. The

specific content shall be agreed upon by the supplier and the purchaser.

5.3.2 Carbides in the form of bands or lumps are not permitted. Heat treatment is permitted to alter the morphology of the carbides.

5.3.3 Castings are generally supplied in the as-cast condition. When required by the purchaser, they shall be subjected to the specified heat treatment process. Recommended heat treatment processes are given in Annex C.

5.4 Geometric shapes and their dimensional tolerances The geometric shape and dimensions of the castings shall comply with the specifications in the drawings or the purchase contract. Unless otherwise specified, the dimensional tolerance grade shall meet the requirements for DCTG10 as specified in GB/T 42124.3-2025, and the geometric tolerance grade shall comply with the requirements for GCTG6 as specified in GB/T 42124.3-2025.

5.5 Weight tolerance The weight tolerance of the castings shall comply with the specifications in the drawings or the purchase contract. In the absence of special requirements, the weight tolerance grade shall comply with the grade MT10 specified in GB/T 11351-2017.

5.6 Surface quality

5.6.1 Adhering sand, oxide scale, and similar matter on the casting surfaces shall be thoroughly removed. Gating and riser remnants, scabs, flash, and burrs shall be removed; the amount of residue remaining shall comply with the specifications in the drawings or the purchase contract.

5.6.2 The surface roughness of the castings shall comply with the specifications in the drawings or the purchase contract. In the absence of specific requirements, it shall be determined by the supplier. For castings weighing less than 1000 kg per piece, the surface roughness parameter shall comply with the requirement of $Ra \leq 50 \mu m$ as specified in GB/T 6060.1-2018. For castings weighing 1000 kg or more per piece, the surface roughness parameter shall comply with the requirement of $Ra \leq 100 \mu m$ as specified in GB/T 6060.1-2018.

5.6.3 Castings may contain surface defects that can be removed by machining. The types, quantity, and extent of casting defects permitted on non-machined surfaces shall comply with the specifications in the drawings or the purchase contract.

5.7 Internal quality

5.7.1 Castings shall be free from cracks and casting defects - such as slag inclusions, sand inclusions, gas holes, shrinkage cavities, and shrinkage porosity - that impair service performance.