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**Malleable iron castings
(English Translation)**

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1 Scope

This Standard specifies the classification and designation, technical requirements, test methods, inspection rules, marking of castings, surface protection, packaging, storage and transportation requirements for malleable iron castings.

This Standard is applicable to malleable iron castings cast in sand molds or molds with thermal conductivity equivalent to those of sand molds.

Malleable iron castings cast in other molds may also take this Standard as a reference.

2 Normative References

The clauses of the following documents become clauses of this Standard through the normative references in this Standard. In terms of references with a specified date, all subsequent amendments (excluding errata content) or revisions do not apply to this Standard. However, the various parties that reach an agreement in accordance with this Standard are encouraged to explore whether the latest versions of these documents are applicable. In terms of references without a date, the latest versions apply to this Standard.

GB/T 223.12 Methods for Chemical Analysis of Iron, Steel and Alloy - The Sodium Carbonate

Separation - Diphenyl Carbazide Photometric Method for the Determination of Chromium Content

GB/T 223.59 Iron, Steel and Alloy - Determination of Phosphorus Content - Bismuth Phosphomolybdate Blue Spectrophotometric Method and Antimony Phosphomolybdate Blue Spectrophotometric Method

GB/T 223.60 Methods for Chemical Analysis of Iron, Steel and Alloy - The Perchloric Acid Dehydration Gravimetric Method for the Determination of Silicon 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 223.63-1988, neq ASTM E350:1985)

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

GB/T 223.69 Iron, Steel and Alloy - Determination of Carbon Contents - Gas-volumetric Method after Combustion in the Pipe Furnace

GB/T 228 Metallic Materials - Tensile Testing at Ambient Temperature (GB/T 228-2002, ISO 6892:1998, EQV)

GB/T 231.1 Metallic Materials - Brinell Hardness Test - Part 1: Test Method (GB/T 231.1-2009, ISO 6506-1:2005, MOD)

GB/T 1031 Geometrical Product Specifications (GPS) - Surface Texture: Profile Method - Surface Roughness Parameters and Their Values

GB/T 1958 Geometrical Product Specifications (GPS) - Geometrical Tolerance - Verification Prescription

GB/T 4336 Standard Test Method for Spark Discharge Atomic Emission Spectrometric Analysis of Carbon and Low-alloy Steel (routine method)

GB/T 5612 Code for Representing Cast Iron (GB/T 5612-2008, ISO 15931:2004, MOD)

GB/T 6060.1 Roughness Comparison Specimens - Cast Surfaces (GB/T 6060.1-1997, eqv ISO 2632-3:1979)

GB/T 6414 Castings - System of Dimensional Tolerances and Machining Allowances (GB/T 6414-1999, eqv ISO 8062:1994)

GB/T 11351 Mass Tolerances of Casting

GB/T 25746 Metallographic Test for Malleable Cast Iron

JB/T 5105 Casting Pattern - Pattern Draft

3.1 Classification

Due to the differences in properties and metallographic structure caused by chemical composition and heat treatment process, the malleable iron castings are classified into two categories. The first category: black-heart malleable iron castings and pearlitic malleable iron castings. The second category: white-heart malleable iron castings.

3.1.1 Black-heart malleable iron castings and pearlitic malleable iron castings

The metallographic structure of black-heart malleable iron castings: mainly ferrite matrix + flocculent graphite.

The metallographic structure of pearlitic malleable iron castings: mainly pearlite matrix + flocculent graphite.

3.1.2 White-heart malleable iron castings

The metallographic structure of white-heart malleable iron castings depends on the cross-through negotiation at the time of order acceptance.

5.1 Production Mode

The production mode of malleable iron castings can be selected by the supply-side, but it shall be ensured that it reaches the requirements of the order agreement.

5.2 Chemical Composition

The chemical composition of malleable iron castings is selected by the supply-side and is not used as a basis for acceptance inspection. If the demand-side has requirements for chemical composition, then, they shall be stipulated in the order agreement by the demand-side and the supply-side.

5.3 Mechanical Properties

5.3.1

The mechanical properties of malleable iron castings are based on the tensile strength and elongation of tensile specimens as the basis for acceptance inspection. The mechanical

properties of tensile specimens shall comply with the stipulations of Table 1 and Table 2.

5.3.2

If the demand-side has requirements for yield strength and hardness, they shall be agreed upon by the demand-side and the supply-side, and shall comply with the stipulations of Table

1 and Table 2.

5.3.3

If the demand-side has requirements for impact properties, the impact test value shall be stipulated in the supply agreement by the demand-side and the supply-side. The inspection method shall comply with the requirements of 6.5.

5.3.4

If the demand-side has requirements for other properties (such as: compression resistance, bending, torsion and elastic modulus, etc.), then, an agreement shall be reached at the time of ordering.

5.4 Metallographic Structure

If the demand-side has specific requirements for the metallographic structure, they shall comply with the demand-side's drawings and technical requirements.

5.5 Surface Quality

5.5.1

The castings shall be cleaned and excess parts shall be trimmed. The removal requirements for pouring and riser residues, adhering sand, oxide scale and inner cavity residues shall comply with the technical specifications or the order agreement between the demand-side and the supply-side.

5.5.2

The roughness of the casting surface shall comply with the stipulations of GB/T 1031 or GB/T 6060.1, or the requirements of the demand-side's drawings and product technical standards.

5.5.3

When delivered, the castings shall comply with demand-side's rust prevention requirements.