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MECHANICAL INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 77.140.80

J 31

Filing number: 61736-2018

JB/T 6402-2018

Replacing JB/T 6402-2006

Heavy low alloy steel castings -

Technical specification

大型低合金钢铸件 技术条件

Issued on: February 09, 2018

Implemented on: October 01, 2018

Issued by: Ministry of Industry and Information Technology of PRC

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces JB/T 6402-2006 "Heavy low alloy steel castings". As compared with JB/T 6402-2006, the main technical changes are as follows:

- MODIFY the order requirements (see Chapter 3; Chapter 3 of the 2006 edition);
- MODIFY the melting method of steel for casting (see 4.1; 4.1.1 of 2006 edition);
- MODIFY the provision for repair welding (see 4.4.1; 4.1.4 of 2006 edition);
- ADD the definition of major defects (see 4.4.2);
- ADD the material designations ZG25Mn, ZG20CrMoV, ZG15Cr1Mo1V (see Tables 1 and 2);
- MODIFY the chemical composition of ZG20Mn and ZG35Mn (see Table 1; Table 1 of 2006 edition);
- MODIFY the mechanical performance symbols; MODIFY some of the mechanical performance indicators of ZG20Mn, ZG30Mn, ZG35Mn, ZG40Mn, ZG40Mn2, ZG35Cr1Mo and ZG42Cr1Mo (see Table 2; Table 2 of the 2006 edition);
- ADD the hardness requirements for ZG65Mn and ZG55CrMnMo (see Table 2; Table 2 of the 2006 edition);
- ADD the requirements for non-destructive testing (see 5.3, 6.3);
- MODIFY the requirements for the surface quality of castings (see 5.4.2; 4.4.2 of the 2006 edition);
- MODIFY the requirements for chemical composition analysis; ADD the requirements for spectral analysis methods and arbitration analysis (see 6.1; 5.1 of the 2006 edition);
- MODIFY the rules of the impact test, to change that "the single value of the impact absorption energy shall be not less than 2/3 of the specified value to "70%" (see 6.2.4; 5.2.4 of the 2006 edition);
- MODIFY the requirements for the evaluation of surface roughness (see 6.4; 5.4 of the 2006 edition);

Heavy low alloy steel castings - Technical specification

1 Scope

This standard specifies the order requirements, manufacturing processes, technical requirements, inspection rules and test methods, quality certificates, markings and packaging for general heavy low-alloy steel castings (hereinafter referred to as castings).

This standard applies to castings as casted in sand molds or molds with similar thermal conductivity to sand molds.

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 standard.

GB/T 222 Permissible tolerances for chemical composition of steel products

GB/T 223 (All parts) Methods for chemical analysis of steel and alloys

GB/T 228.1 Metallic materials - Tensile testing - Part 1: Method of test at room temperature

GB/T 229 Metallic materials - Charpy pendulum impact test method

GB/T 231.1 Metallic materials - Brinell hardness test - Part 1: Test method

GB/T 4336 Carbon and low-alloy steel - Determination of multi-element contents - Spark discharge atomic emission spectrometric method (routine method)

GB/T 11352 Carbon steel castings for general engineering purpose

GB/T 15056 Casting surface roughness - Appraising method

GB/T 20066 Steel and iron - Sampling and preparation of samples for the determination of chemical composition

JB/T 5000.6 Heavy mechanical general techniques and standards - Part 6:

Steel castings

JB/T 5000.7 Heavy mechanical general techniques and standards - Part 7:
Repair welding for steel castings

JB/T 6397-2006 Specification for the heavy carbon structural steel forgings

3 Order requirements

3.1 The purchaser shall specify the name of the casting, material designations, technical requirements, inspection items, delivery status and quantity of supply in the order contract.

3.2 The purchaser shall provide order drawings and technical conditions approved by both the supplier and the purchaser.

3.3 When the purchaser proposes special requirements or other supplementary requirements, it shall be agreed between the supplier and the purchaser.

4 Manufacturing process

4.1 Smelting

Steel for castings shall be smelted by induction furnace, electric arc furnace, electric furnace and refined outside the furnace or adopt other melting methods that meet the requirements confirmed by both the supplier and the purchaser.

4.2 Casting

When the purchaser has no special requirement, the casting process shall be determined by the supplier.

4.3 Heat treatment

Castings shall be heat treated. Unless otherwise specified, the supplier may perform heat treatment according to the requirements of mechanical properties.

4.4 Repair welding

4.4.1 When the purchaser permits repair welding of casting defects, the supplier may repair of casting defects. Unless otherwise specified, repair welding shall be performed in accordance with the provisions of JB/T 5000.7. The process of

5.4 Surface quality of casting

5.4.1 The surface roughness of castings shall meet the requirements of drawings or order agreements. In general, the surface roughness R_a shall be less than or equal to 100 μm .

5.4.2 The surface of the casting shall be free from defects that affect its use.

5.5 Shape and dimensional tolerances

The dimensional tolerances and machining allowances of castings shall comply with the provisions of drawings or order agreements. If there are no requirements in the drawings or order agreements, the machining allowances and dimensional tolerances of castings shall comply with the provisions of JB/T 5000.6.

6 Inspection rules and test methods

6.1 Analysis of chemical composition

6.1.1 When there is no special agreement between the supplier and the purchaser, samples for chemical composition analysis of the casting shall be taken from the ladle during the pouring process or before tapping; one sample shall be taken from each ladle. When one piece is casted by multi-ladles, the chemical composition of the castings is calculated using the weighted average analysis method.

6.1.2 Sampling and sample preparation for chemical composition analysis shall be performed in accordance with the provisions of GB/T 20066.

6.1.3 Conventional chemical composition analysis shall be performed in accordance with GB/T 223; spectral analysis shall be performed in accordance with GB/T 4336; arbitration analysis shall be performed in accordance with GB/T 223.

6.2 Mechanical property test

6.2.1 The test blocks for mechanical property tests are in accordance with GB/T 11352. When there is no special agreement between the supplier and the purchaser, the use of individual or auxiliary test blocks shall be determined by the supplier.

unsatisfactory, it may take double quantity of samples for retesting in the adjacent position near the failed test block. The retest results shall meet the requirements in Table 2. Otherwise, the supplier may deal with them in accordance with the provisions of 6.6.

6.6 Reheat treatment

When the retest results still do not meet the requirements in Table 2, the castings and test blocks may be heat treated again, but the reheat treatment shall not be more than 2 times (the number of tempering is unlimited). After reheating, the test shall be repeated as specified in 6.2 and 6.3.

7 Certificate of quality

Upon delivery, the supplier shall provide the quality certificate to the purchaser. The quality certificate shall include the following:

- a) Order contract number;
- b) Drawing number;
- c) Name of the casting;
- d) Weight of the casting;
- e) Product implemented standard number and material designation;
- f) Casting's identification number or melting furnace number;
- g) Chemical composition analysis report and mechanical property test report, etc.;
- h) Heat treatment status, heat treatment curve record, heat treatment furnace batch number;
- i) Records of major defects and repair welding (including sketches of positions and dimensions);
- j) Other inspection reports required in contracts and technical agreements.

8 Marking and packaging

8.1 Castings shall be identified by supplier identification, order contract number, furnace number, production batch number, part number, etc.

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