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General purpose industrial valves - Specification of stainless steel castings

通用阀门 不锈钢铸件技术条件

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General purpose industrial valves - Specification of stainless steel castings

1 Scope

This Standard specifies the chemical composition, mechanical properties, technical requirements, test and inspection, etc. of stainless steel castings for general purpose industrial valves.

This Standard is applicable to stainless steel castings such as pressure valves, flanges, and pipe fittings used in high temperature and corrosive environments.

2 Normative references

The clauses in the following documents, by reference in this Standard, constitute the clauses of this Standard. For the dated references, the subsequent amendments (not including errata content) or revisions do not apply to this Standard. However, parties which have reached an agreement according to this Standard are encouraged to study whether the latest version of these documents can be used. For the undated references, the latest version is 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 iron, steel and alloy

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

GB/T 2100 Corrosion-resistant steel castings for general applications (GB/T 2100-2002, eqv ISO 11972:1998)

GB/T 4334 (all parts) Corrosion of metals and alloys - Test methods for intergranular corrosion of stainless steels

GB/T 5613 Designation for cast steels

GB/T 5677 Methods of radiographic testing and classification of radiographs for steel castings (GB/T 5677-1985, neq JCSS G2)

GB/T 6414 Castings - System of dimensional tolerances and machining

its representative.

3.2.2.2 Product analysis

The product analysis can be carried out by the purchaser itself. Representative samples are taken from each furnace, each batch, or each casting.

When drilling for sampling, it shall generally be taken at least 6.5 mm below the surface. When the thickness of casting is less than 12 mm, it shall be sampled at the central position. The analytical results shall be in accordance with the provisions of Table 1. The permissible tolerances for analysis shall be in accordance with the provisions of GB/T 222. The permissible tolerances for product analysis cannot be used as the acceptance basis for the castings leaving the factory.

3.2.2.3 Arbitration analysis

The sampling method for chemical analysis shall be in accordance with the provisions of GB/T 222. The arbitration analysis for chemical composition shall be in accordance with the provisions of GB/T 223.

3.3 Mechanical properties

The mechanical properties of castings shall comply with the requirements of Table 2.

3.4 Heat treatment

The heat treatment shall comply with the requirements of Table 2. The heat treatment furnace shall be equipped with a high temperature meter to effectively control the furnace temperature according to the provisions of GB/T 9452.

3.5 Quality requirements

3.5.1 Casting dimension

Castings shall be in accordance with the shape, dimension, and tolerances of drawings and models provided by the purchaser. If the requirement for dimensional tolerances is not indicated in the drawings, it shall comply with the provisions of corresponding casting accuracy class in GB/T 6414. The mass tolerances of castings shall comply with the provisions of GB/T 11351.

3.5.2 Casting surface

The surface of castings shall, in accordance with the requirements of JB/T 7927 and the order contract, be inspected for appearance; and shall be free from surface defects such as burnt-on sand, oxide skin, and crack.

4 Test methods and inspection rules

4.1 Tensile test

4.1.1 The type, dimension, and test method of the test bar shall be in accordance with the provisions of GB/T 228.

4.1.2 If any test bar is found to have machining defects or casting defects, a spare test bar shall be taken for re-test.

4.1.3 The test block shall be heat treated in the same furnace as the casting.

4.1.4 Each smelting heat of steel shall be subjected to a tensile test. If the mechanical property test results of any heat do not meet the requirements of Table 2, the castings and test bars may be re-heat treated and re-tested, but the solution treatment shall not exceed twice.

4.2 Shell test

4.2.1 Each pressure casting shall, after processing, be subjected to shall test in accordance with the provisions of GB/T 13927.

4.2.2 The casting shell test can be carried out before delivery or after machining of the purchaser, but the casting manufacturer shall be responsible for the quality of the casting for shell test.

4.3 Intergranular corrosion test:

If the intergranular corrosion test is required in the order contract, the test shall be carried out in accordance with GB/T 4334.

4.4 If the radiographic test or ultrasonic test is required in the order contract, it shall be carried out according to GB/T 5677 and GB/T 7233 respectively. If the liquid penetrant test is required in the order contract, it shall be carried out according to the provisions of GB/T 9443.

4.5 If pickling and passivation treatment is required in the order contract, it shall be carried out according to the requirements negotiated by both parties.

4.6 The casting manufacturer shall provide the test reports of chemical composition and of mechanical properties to the purchaser at the same time; none is dispensable. A certificate which proves the conformity of casting with this Standard shall be accompanied.

4.7 The casting manufacturer shall provide the inspection personnel from the

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