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GB/T 6967-2009

**Martensitic stainless steel castings for general engineering
application
(English Translation)**

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Foreword

This standard is modified in relation to ISO 11972:1998 "Corrosion-resistant cast steels for general applications" and ISO 4990:2003 "Steel castings - General technical delivery requirements"; and it refers to the partial provisions of foreign standards such as DIN EN 10293:2005 "Steel castings for general engineering uses".

This standard is modified in relation to the combination of ISO 3755:1991 and ISO 4990:2003; the differences on main technical contents are as follows.

- The bigish editorial changes were done on structure; Chapter 6 and 7 in ISO 11972:1998 were modified; the heat treatment process was changed to be determined by supplier in Chapter 6; the supplementary requirements in Chapter

7 was modified as the Chapter 3 in this standard. Table 1 - Permissible deviations

of check analysis with respect to the specified composition range and the Table 2

- Alternative material designation identification in ISO 4990:2003 were deleted; the mechanical property test block specification, sampling position and dimension in Appendix 8 were modified. This standard replaces GB/T 6967 - 1986 "Medium and high strength stainless steel castings for engineering structure purposes"; being compared to GB/T 6967-1986, the main technical content revisions are as follows.

- Two Ultra-low carbon high strength stainless steel cast brand ZG04Cr13Ni4Mo and ZG04Cr13Ni5Mo were increased; ZG06Cr13Ni6Mo was deleted.
- Low temperature impact absorbing energy and cold bent performance requirements were added;
- The Purity degree requirements for molten steel were added;
- High strength and high tenacity stainless steel cast designations that adopt refining process were added.

This standard shall be under the jurisdiction of and proposed by the National Technical Committee on Foundry of Standardization Administration of China.

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Martensitic Stainless Steel Castings for General Engineering Application

1 Scope

This standard specifies the technical requirements, test methods, inspection rules, mark, packing, storage and transportation of high strength martensitic stainless steel in engineering structure uses.

This standard is applicable to the high strength martensitic stainless steel cast in engineering structure uses.

2 Normative References

The following standards contain the provisions which, through reference in this text, constitute the provisions of this standard. For dated reference, the subsequent modification or revisions of these publications do not apply. However, all parties who

reach an agreement according to this standard are encouraged to study whether the latest edition of these documents is applicable. For undated references, the latest edition of the normative document is applicable to this standard.

GB/T 222 Permissible Tolerances for Chemical Composition of Steel Products

GB/T 223.3 Methods for Chemical Analysis of Iron, Steel and Alloy - The Diantipyrylmethane 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 223.60 Methods for Chemical Analysis of Iron, Steel and Alloy - The Perchloric Acid Dehydration Gravimetric Method for the Determination of Silicon Content

GB/T 228 Metallic Materials - Tensile Testing at Ambient 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 231.2 Metallic Brinell Hardness Test - Part 2. Verification and Calibration of Hardness Testers

GB/T 231.3 Metallic Brinell Hardness Test - Part 3. Calibration of Hardness Reference Blocks

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

GB/T 5677 Radiographic Testing for Steel Castings (GB/T 5677-2007, ISO 4993.1987, IDT)

GB/T 6060.1 Roughness Comparison Specimens Cast Surfaces

GB/T 6414-1999 Castings - System of Dimensional Tolerances and Machining Allowances (GB/T 6414 - 1999, eqv ISO 8062.1994)

GB/T 7233 Methods for Ultrasonic Testing and for Specifying Quality Levels of Steel Castings

GB/T 9443 Penetrant Testing for Steel Castings

GB/T 9444 Magnetic Particle Testing for Steel Castings

3.1 The adoptive standard, material designation, quantity, corresponding technical

requirements, examination item and supply status shall be specified definitely in the order contract or order agreement by demanders; the order pattern shall be provided to suppliers.

3.2 The additional requirements beyond this standard proposed by demanders shall

be confirmed basing on the agreement of both the supplier and the purchaser.

4.1.1 The chemical composition of each cast steel designation shall be in
accordance with those specified in Table1.

4.1.2 Unless otherwise specified, the residual element content shall not be regarded

as the acceptance criterion.

4.1.3 For ZG04Cr13Ni4Mo and ZG04Cr13Ni5Mo, the gas content of refined molten
steel shall be controlled as. $[H] \leq 3 \times 10^{-6}$, $[N] \leq 200 \times 10^{-6}$, $[O] \leq 100 \times 10^{-6}$, unless
otherwise specified, the gas content shall not be regarded as the acceptance criterion.
shall be recognized by the demander.

4.4.5 That the depth of pits which are prepared for scalding is more than 20% of
casting section thickness or 25 mm (take the smaller among two) or there is leakage
for hydraulic test of pressure-bearing cast shall be regarded as the biggish defect.

4.4.6 Stress relief heat treatment shall be carried out after the scalding of biggish
defects; the scalding shall be inspected according to the detection standard of the
cast and qualified scalding shall be confirmed.

4.5.1 Dimensional Tolerances for Castings and machining allowance shall meet the

pattern or order agreement; if there are no provisions in the pattern or order