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

GB/T 32255-2015

**General martensitic stainless steel and alloy steel castings
suitable for high temperature and high pressure service
(English Translation)**

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Foreword

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

This standard was proposed by AND shall be under the jurisdiction of National Foundry Standardization Technical Committee (SAC/TC 54).

The drafting organizations of this standard. China Nuclear Valve Factory Hengdian Machinery Co., Ltd., Shanghai Honggang Power Equipment Casting and Forging Co., Ltd., Chinese Academy of Sciences Institute of Metal Research, Anhui Yingliu Group Huoshan Casting Co., Ltd., KOCEL Cast Steel Co., Ltd. Shenyang Casting Research Institute.

1 Scope

This standard specifies the technical requirements, test methods, inspection rules, marking, storage, packing and transportation requirements for General martensitic stainless steel and alloy steel castings suitable for high temperature and high pressure service.

This standard is applicable to cast valves, flanges, and pipe fittings used at working temperature not higher than 600 °C; AND other castings for high temperature and high pressure service may refer to this standard.

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 223.4 Alloyed steel - Determination of manganese content -

Potentiometric or visual titration method

GB/T 223.5 Method for chemical analysis of iron, steel and alloy - The reduced molybdosilicate spectrophotometric method for the determination of acid-soluble silicon content

GB/T 223.9 Iron, steel and alloy - Determination of aluminum content -

Chrom azurol S spectrophotometric method

GB/T 223.11 Iron, steel and alloy - Determination of chromium content -

Visible titration or potentiometric titration method

GB/T 223.14 Method for chemical analysis of iron, steel and alloy - The N-Benzoyl-N-Phenylhydroxylamine extraction photometric method for the determination of vanadium content

GB/T 223.23 Iron, steel and alloy - Determination of nickel content - The dimethylglyoxime spectrophotometric method

GB/T 223.26 Iron, steel and alloy - Determination of molybdenum content - The thiocyanate spectrophotometric method

GB/T 223.36 Method for chemical analysis of iron, steel and alloy - The neutral titration method for the determination of nitrogen content after distillation separation

GB/T 223.40 Iron, steel and alloy - Determination of niobium content by the Chlorosulfonol S spectrophotometric method

GB/T 223.43 Iron, steel and alloy - Determination of tungsten content -

Gravimetric method and spectrophotometric method

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 223.67 Iron, steel and alloy - Determination of sulfur content -

Methylene blue spectrophotometric method

GB/T 223.69 Iron, steel and alloy - Determination of carbon - Gas-volumetric
method after combustion in pipe furnaces

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

GB/T 5677 Radiographic testing for steel castings

GB/T 6060.1 Roughness comparison specimens - Cast surfaces

GB/T 6414 Castings - System of dimensional tolerance and machining
allowances

GB/T 7233.2 Steel castings - Ultrasonic examination - Part 2. Steel castings
for highly stressed components

**3.7.3 The welders undertaking welding repair work shall have corresponding
qualifications.**

**3.7.4 Unless otherwise agreed by the supplier and the buyer, if the depth of the
welding groove (pit) exceeds 40% of the wall thickness OR 25 mm (whichever
is the less), it belongs to major welding repair, which shall be agreed in advance
by the buyer, AND be with such records as welding conditions, welding repair
location, scope and so on.**

3.7.5 It shall select suitable welding consumables AND finish the welding

procedure assessment, before welding. As for the casting to be subjected to major welding repair, it shall be subjected to post-weld heat treatment.

3.7.6 After welding repair, the castings shall be inspected in accordance with

the same standard for castings inspection.

3.8 Correction

If the castings have deformation, it is allowed to correct it; AND the corrected castings shall be subjected to stress relief treatment.

4.1.1 Chemical composition arbitration analysis method shall be in accordance

with GB/T 223.4, GB/T 223.5, GB/T 223.9, GB/T 223.11, GB/T 223.14, GB/T 223.23, GB/T 223.26, GB/T 223.36, GB/T 223.40, GB/T 223.43, GB/T 223.59, GB/T 223.67, and GB/T 223.69.

4.1.2 Spectral analysis shall be conducted in accordance with the provisions of

GB/T 4336.

4.2.2 The impact test shall be conducted in accordance with the provisions of

GB/T 229.

4.3.1 Unless otherwise specified, the casting surface magnetic particle testing

shall be conducted in accordance with the provisions of GB/T 9444.

sample's impact value to be below the value as specified in Table 2, BUT it shall not be less than 2/3 of the specified value.

5.2.6 The test results of mechanical properties that do not meet the specified

requirements are considered to be invalid for the following reasons.

- a) The sample is not properly installed OR the test machine is not functioning properly;
- b) The tensile test sample breaks apart beyond the gauge length;
- c) Improper sample preparation;