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High temperature stainless steels for bearing

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High temperature stainless steels for bearing

1 Scope

This standard specifies the classification and code, order content, size, shape, weight, technical requirements, test methods, inspection rules, packaging, markings and quality certificates of high temperature stainless steels for bearing.

This standard applies to hot-rolled or forged round steel, cold-drawn round steel and steel wire (hereinafter referred to as steel) for the manufacture of stainless steel bearings that can withstand high temperatures of 300 °C ~ 400 °C.

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 223.5 Steel and iron - Determination of acid-soluble silicon and total silicon content - Reduced molybdosilicate spectrophotometric method

GB/T 223.11 Iron, steel and alloy - Determination of chromium content - Visual titration or potentiometric titration method

GB/T 223.13 Methods for chemical analysis of iron, steel and alloy - The ammonium ferrous sulfate titration 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 223.53 Methods for chemical analysis of iron, steel and alloy - The flame atomic absorption spectrophotometric method for the determination of copper content

GB/T 223.62 Methods for chemical analysis of iron, steel and alloy - The

tower sample

GB/T 10561-2005 Steel - Determination of content of nonmetallic inclusions
- Micrographic method using standards diagrams

GB/T 11170 Stainless steel - Determination of multi-element contents -
Spark discharge atomic emission spectrometric method (Routine method)

GB/T 13298 Inspection methods of microstructure for metals

GB/T 14979-1994 Eutectic carbide of steel - Micrographic method using
Standard diagrams

GB/T 15711 Inspection of non-metallic inclusions of steel - Etching test
method of tower samples

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

GB/T 20123 Steel and iron - Determination of total carbon and sulfur content
Infrared absorption method after combustion in an induction furnace (routine
method)

GB/T 32548 Determination of iron, tin, antimony, cerium, lead and bismuth -
Inductively coupled plasma - mass spectrometric method

GB/T 36026-2018 High-strength corrosion-resistant alloy bars for oil and gas
engineering

YB/T 4395 Steel - Determination of molybdenum, niobium and tungsten
contents - Inductively coupled plasma atomic emission spectrometric
method

YB/T 4396 Stainless steel - Determination of multi-element contents -
Inductively coupled plasma atomic emission spectrometric method

3 Classification and code

3.1 Steels are divided into the following two categories according to the
processing methods used:

- a) Steel for pressure processing UP;
- b) Steel for cutting UC.

3.2 Steels are divided into the following two categories according to their end
use:

6.12.2 The total decarburization depth on each side of the cold-drawn round steel and steel wire surface shall not be greater than 1.5% of the nominal diameter.

6.12.3 There shall be no decarburized layer on the surface of the stripped and polished steel.

6.13 Ultrasonic testing

The steel shall be subjected to ultrasonic testing according to GB/T 4162-2008 one by one. It shall meet the requirements of Class A.

6.14 Surface quality

6.14.1 The surface of hot-rolled (forged) round steel shall not have cracks, folds, tears, scars, inclusions or other defects harmful to use; it shall meet the following requirements:

- a) For the removal depth of harmful defects on the surface of steel for pressure processing from the actual size, it shall not exceed half of the dimensional tolerance for the round steel with a nominal diameter of less than 80 mm; it shall not exceed the dimensional tolerance for the round steel with a nominal diameter of more than 80 mm;
- b) For the removal depth of harmful defects on the surface of steel for cutting processing from the actual size, it shall not exceed half of the dimensional tolerance for the round steel with a nominal diameter of less than 80 mm; it shall not exceed the dimensional tolerance for the round steel with a nominal diameter of more than 80 mm.

6.14.2 The surface of cold-drawn round steel shall be clean and smooth; there shall be no harmful defects such as cracks, scars, folds, rust and oxide skin. The surface is allowed to have pitting, scratches, pull marks, dark spots, concave surfaces, cleaning oblique marks, lubricant marks and individual small hairlines whose depth does not exceed half of the dimensional tolerance from the actual size.

6.14.3 There shall be no flaws, such as cracks, folds, scars, etc., on the surface of the steel wire. Individual mechanical scratches and pits are allowed. The

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