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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 29913-2025

Replacing GB/T 29913.1-2013

Medium carbon alloy bearing steel

中碳合金轴承钢

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Standardization Administration of the PRC

Table of Contents

1 Scope

This document specifies the ordering contents, manufacturing process, technical requirements, test methods, inspection rules, packaging, marks, and quality certificates for medium carbon alloy bearing steel.

This document applies to continuously cast round billets with a nominal diameter ranging from 250 mm~1350 mm, hot-rolled bars with a nominal diameter not exceeding 500 mm, and forged bars with a nominal diameter not exceeding 1200 mm (hereinafter collectively referred to as "steel products"). The chemical composition specified herein also applies to ingots.

2 Normative references

GB/T 223

GB/T 225

GB/T 226

GB/T 231.1

GB/T 1814

GB/T 1979

GB/T 2101

GB/T 4162

GB/T 4336

GB/T 6394

GB/T 6402

GB/T 10561-2023

GB/T 11261

GB/T 15711

GB/T 20066

GB/T 20123

GB/T 38683

3 Terms and definitions

This document contains no terms or definitions requiring definition.

4 Ordering contents

Contracts or orders placed pursuant to this document shall include the following.

a) Reference to this document;

b) Product name;

c) Designation;

d) Specification;

e) Weight (or quantity);

f) Delivery condition;

g) Special requirements.

5.1 Smelting method

The steel shall be smelted in an electric furnace (or converter) and subjected to ladle refining and vacuum degassing treatments.

5.2.1 Continuously cast round billets and ingots shall be delivered in the as-cast

condition. Hot-rolled bars shall be delivered in the hot-rolled condition. Forged bars shall be

delivered in the forged condition.

5.2.2 Upon mutual agreement between the supplier and the purchaser, and as specified

in the contract, steel materials may also be delivered in the annealed condition.

6.1.1 The steel designation and chemical composition (ladle analysis) shall comply with

the requirements specified in Table 1.

6.1.2 The oxygen content (mass fraction) in the steel shall not exceed 0 0015%, and the hydrogen content (mass fraction) shall not exceed 0.00020%.

6.1.3 The contents (mass fractions) of tin, arsenic, antimony, lead, and bismuth in the steel shall each not exceed 0.010%.

Table 1 -- Designation and chemical composition

6.1.4 The allowable deviations in the chemical composition of the finished product shall

comply with the provisions of Table 2.

The austenitic grain size of the steel shall be Grade 5 or finer. If the supplier can guarantee compliance, grain size inspection may be omitted.

6.6.1 The surface of continuously cast round billets shall be free from visually

discernible scabs, blowholes, pinholes, inclusions, and laps. Shall any of the aforementioned defects be present, they must be removed. The cleared areas shall be smooth and free of sharp edges. The depth of removal, measured from the actual surface of the continuously cast round billet, shall not exceed 4% of the diameter, with a maximum removal depth not exceeding 12 mm. The ratio of depth to width to length shall be no less than 1.6.8.On any given cross-section, the maximum removal depth shall occur at no more than one location. The presence of folds and pits with a depth not exceeding 3.0 mm, raised ridges with a height not exceeding 3.0 mm, and mechanical scratches or indentations with a depth not exceeding 2.0 mm is allowable.

6.6.2 The surface of hot-rolled bars shall be free from visually discernible cracks, scabs, folds, fins, and inclusions. Shall any such defects be present, they must be removed.

The depth of removal, calculated from the actual dimensions of the hot-rolled bar, shall not exceed the actual dimensional tolerance of the bar. The cleared area shall be smooth and free of sharp edges. The width of the cleared area shall be no less than five times its depth. On any given cross-section, the maximum depth of removal shall not occur at more than

one location. The presence of isolated minor scratches, indentations, pits, and small cracks (not exceeding 0.2 mm in depth) is allowable, provided that their depth, calculated from the actual dimensions, does not exceed half of the dimensional tolerance.

6.6.3 The surface of forged bars shall be free from visually discernible cracks, scabs, folds, and inclusions. Shall such defects be present, they must be removed. The depth of removal, calculated from the actual dimensions of the forged bar, shall not exceed 5% of the actual dimension, with a maximum removal depth of 15 mm. The cleared area shall be smooth and free of sharp edges. The width of the cleared area shall be no less than five times its depth. On any given cross-section, the maximum removal depth shall occur in no more than one location. The presence of isolated, minor scratches, indentations, and pits is allowable, provided that their dimensions do not exceed half of the specified dimensional tolerance and they do not impair the usability of the product for the purchaser.

6.6.4 At the request of the purchaser, and as stipulated in the contract, non-destructive testing methods may be employed to inspect the surface quality of hot-rolled and forged bars. The acceptance level shall be determined through negotiation between the supplier and the purchaser.

6.7.1 Diameter and allowable deviation

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