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CCS J31



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

GB/T 1174-2022

Replacing GB/T 1174-1992

Cast bearing alloy

铸造轴承合金

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1 Scope

GB/T 1174-2022 is the Chinese national standard on cast bearing alloy, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 12 October 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 12 October 2022. Classification: ICS 77.150.99, CCS J31. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the cast bearing alloy designations and codes, technical requirements, test methods, inspection rules, marking, packaging, transportation, storage and quality certificates. This document applies to cast tin-based, lead-based, copper-based and aluminum-based bimetallic plain bearings, as well as copper-based, zinc-based and aluminum-based alloy integral plain bearings.

2 Normative references

The following documents are normatively referenced in this document and are

indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 228.1, Metallic materials - Tensile testing - Part 1: Method of test at room temperature

GB/T 231.1, Metallic materials - Brinell hardness test - Part 1: Test method

GB/T 1173, Casting aluminium alloy

GB/T 1175, Casting zinc alloys

GB/T 1176, Casting copper and copper alloys

GB/T 5121.1, Methods for chemical analysis of copper and copper alloys - Part 1: Determination of copper content

GB/T 5121.2, Methods for chemical analysis of copper and copper alloys - Part 2: Determination of phosphorus content

GB/T 5121.3, Methods for chemical analysis of copper and copper alloys - Part 3: Determination of lead content

GB/T 5121.4, Methods for chemical analysis of copper and copper alloys - Part 4: Determination of carbon and sulfur content

GB/T 5121.5, Methods for chemical analysis of copper and copper alloys - Part 5: Determination of nickel content

GB/T 5121.6, Methods for chemical analysis of copper and copper alloys - Part 6: Determination of bismuth content

GB/T 5121.7, Methods for chemical analysis of copper and copper alloys - Part 7: Determination of arsenic content

GB/T 5121.9, Methods for chemical analysis of copper and copper alloys - Part 9: Determination of iron content

3 Terms and definitions

Terms and definitions determined by GB/T 5611 are applicable to this document.

4 Alloy designations and codes

4.1 Representation of alloy designations The cast bearing alloy designations shall be represented in accordance with the provisions of GB/T 8063.

4.2 Alloy casting method codes S - sand casting; J - permanent mold casting; Li - centrifugal casting.

4.3 Alloy heat treatment state codes T5 - solution treatment plus incomplete artificial aging.

6.1.2.2 When the analysis results are in dispute, arbitration shall be carried out according to GB/T 5121.1~5121.7, GB/T 5121.9~5121.13 and GB/T 5121.23.

6.1.3 Composition analysis of zinc-based bearing alloy

6.1.3.1 The composition analysis of zinc-based bearing alloy shall be carried out in accordance with the provisions of GB/T 12689.1 and GB/T 12689.3~12689.10. Where analytical precision is guaranteed, other detection methods are allowed.

6.1.3.2 When the analysis results are in dispute, arbitration shall be carried out according to GB/T 12689.1 and GB/T 12689.3~12689.10.

6.1.4 Composition analysis of aluminum-based bearing alloy

6.1.4.1 The composition analysis of aluminum-based bearing alloy shall be carried out in accordance with the provisions of GB/T 20975.3~20975.5, GB/T 20975.7, GB/T 20975.8, GB/T 20975.10, GB/T 20975.12, GB/T 20975.14 and GB/T 20975.16. Where analytical precision is guaranteed, other detection methods are allowed.

6.1.4.2 When the analysis results are in dispute, arbitration shall be carried out according to GB/T 20975.3~20975.5, GB/T 20975.7, GB/T 20975.8, GB/T 20975.10, GB/T 20975.12, GB/T 20975.14 and GB/T 20975.16.

6.2.1 Mechanical properties

6.2.1 The tensile test shall be carried out in accordance with the provisions of GB/T 228.1.

6.2.2 The hardness test shall be carried out in accordance with the provisions of GB/T 231.1.

6.2.3 The compression test shall be carried out in accordance with the provisions of GB/T 16748.

7 Inspection rules

7.1 Batch Bearing alloys are generally batched according to the smelting furnace. In the case of stable production (stable personnel, raw materials, smelting process, test methods, inspection and other procedures), the same alloy smelted in one work shift and in different furnaces can also be regarded as one batch.

7.2 Sampling method

7.2.1 The test piece can be taken from the casting body or from a single-cast test piece cast at the same time. The casting-mold conditions of the single-cast test pieces shall be the same as those of the product castings, and the heat treatment of the test pieces shall

be carried out in the same heat treatment process as that of the same batch of castings.

7.2.2 Mechanical property and chemical composition inspection shall be carried out in batches, and one sample in each batch shall be inspected.

7.2.3 For the chemical composition inspection, only the main elements are required for analysis, and the content of other elements can be randomly checked according to the requirements of the purchaser.

7.3 Judgment and re-inspection

7.3.1 Where the chemical composition fails the first test, it is allowed to inspect two more test pieces; if the analysis results meet the requirements, judge the batch of alloy to be qualified, otherwise, judge it as unqualified.

7.3.2 During the mechanical property inspection, inspect one sample for the first time. If the inspection result meets the standard requirements, judge this batch of alloy to qualified; if not, it is allowed to inspect two more test pieces for the corresponding items. If the analysis results meet the requirements, judge the batch of alloy as qualified, otherwise, judge it as unqualified.

7.3.3 Where the sample has casting defects, or the inspection result is unqualified due to the failure of the test itself, it is an invalid test and will not be counted in the number of inspections. Replace the test pieces for a re-inspection.

7.3.4 When the hardness of the test piece is unqualified, it is allowed to take castings of the same batch for retesting, where the number of castings to be sampled shall not be less than five. If there are less than five castings in the same batch, inspect all of them. Where the hardness of any casting is unqualified in the re-inspection of the selected castings, the batch of castings shall be inspected one by one.

8 Marking, packaging, transportation, storage and quality

Note 1. 2. **Search (Optional).** Enter the keyword **GB/T 1174-2022** in the search bar, if it is not already shown. 3.

Note 2. 9.

Note 3. 10. **Verification (USD**

Notes and Explanations

Note 1:**[GB/T 1174-2022](https://**

Note 3:**If you are unable to redirect back to our Return Page, do not worry. Additionally and independently, our automated system will still deliver your PDF and Invoice via email (the second mechanism to ensure the delivery), typically within 3 minutes. Once your**