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Free-cutting copper alloy rod and bar

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(English Translation)

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Foreword

The modification of this Standard adopts ASTM B 16/B 16M-2005 "Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines" and ASTM B 301/B 301M-2008 "Standard Specification for Free-Cutting Copper Rod, Bar, Wire, and Shapes". The degree of consistency with ASTM B 16/B 16M-2005 and ASTM B 301/B 301M-2008 is modified.

The main differences between this Standard and US ASTM B 16/B 16M-2005 and ASTM B 301/B 301M-2008 are as follows.

- This Standard has 24 more designations than the US standards. HPb57-4, HPb58-2, HPb58-3, HPb59-1, HPb59-2, HPb59-3, HPb60-2, HPb60-3, HPb63-3, HBi59-1, HBi60-1.3, HBi60-2, HMg60-1, HSi75-3, HSi80-3, HSb60-0.9, HSb61-0.8-0.5, HBi60-0.5-0.01, HBi60-0.8-0.01, HBi60-1.1-0.01, QPb1, QTe0.3, QTe0.5-0.008, QSn4-4-4. Corresponding technical requirements for these designations are added.
- This Standard does not include the designations C14510 and C14520 that are in the American standards.
- Compared with the US standards, it adds internal quality, torsion, ultrasonic flaw

detection, residual stress, dezincification corrosion resistance, grain size, cutting requirements and corresponding inspection method regulations in this Standard.

- This Standard does not include the requirements for resistivity and conductivity as well as corresponding test method regulations that are in the American standards.
- This Standard does not cover the O60 condition of rods and bars that is in the American Standard.

This Standard was proposed by China Nonferrous Metals Industry Association.

This Standard shall be under the jurisdiction of National Technical Committee on Non-ferrous Metals of Standardization Administration of China (SAC/TC 243).

Main drafting organizations of this Standard. Zhejiang Hailiang Co., Ltd., Ningbo Pauway Group Co., Ltd.

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Free-cutting copper alloy rod and bar

1 Scope

This document specifies the requirements, test methods, inspection rules and marks, packaging, transportation, storage, quality certificate and contract (or purchase orders), etc. for free-cutting copper alloy rod and bar.

This Standard applies to free-cutting copper alloy rod and bar.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 228-2002, Metallic materials - Tensile testing at ambient temperature

GB/T 2828.1, Sampling procedures for inspection by attributes - Part 1. Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection

GB/T 3310, Ultrasonic testing method of copper and copper alloy bars

GB/T 5121 (all parts), Methods for chemical analysis of copper and copper alloys

GB/T 5231-2001, Wrought copper and copper alloys chemical composition limits and forms of wrought products

GB/T 6394, Determination of estimating the average grain size of metal

GB/T 8888, Wrought heavy non-ferrous metal products - Packing, marking, transporting, storing and quality certificate

3.1.1 Designation, state, specification

The designation, state and specification of the rod and bar shall meet the requirements in Table 1.

3.1.2 Marking examples

Figure 1. Schematic diagram for cross-section shape of rod and bar

3.2 Chemical composition

The chemical composition of rods and bars whose designations are HPb59-1, HPb59-3, HPb60-2, HPb62-3, HPb63-3, QTe0.5, QSn4-4-4 shall meet the requirements for the corresponding designations in GB/T 5231. The chemical composition of other designations shall comply with the provisions in Table 2 (see Annex B for rod and bar designations and corresponding designations in American ASTM standards).

4.1 Arbitration analysis method for chemical composition

The arbitration analysis of the chemical composition of the rod and bar shall be carried out in accordance with the provisions of GB/T 5121. If it exceeds the analysis scope of GB/T 5121, it shall be negotiated by both parties.

4.4 Inspection method for internal quality

The inspection method for internal quality of rods and bars shall be carried out in accordance with the provisions of YS/T 336.

4.5 Inspection method for ultrasonic flaw

The ultrasonic flaw detection test of rods and bars shall be carried out according to the provisions of GB/T 3310.

4.6 Inspection method for residual stress

The residual stress inspection of rods and bars shall be carried out according to the provisions of GB/T 10567.2.

4.9 Testing method for cutting

The testing method for rod and bar cutting shall refer to the provisions in Annex A.

4.10 Surface quality

The surface quality of rods and bars shall be inspected visually.

Diameter (or side-to-side distance)/mm Test number

5.1.1 Rods and bars shall be inspected by the quality inspection department of the

supplier. Ensure that the product quality complies with the provisions of this Standard and the contract (or purchase order). Fill in the quality certificate.

5.2 Batching

Rods and bars shall be submitted for inspection in batches. Each batch shall consist of rods and bars of the same designation, state and specification. The weight of each batch shall not exceed 5000 kg.

5.4 Sampling

The sampling of rods and bars shall comply with the provisions in Table 9.

5.5.2 If the outer dimensions and surface quality of the rod and bar fail, this piece shall

be judged as rejected. When the number of rejected pieces in each batch exceeds the acceptance quality limit, the whole batch shall be judged as rejected, or the supplier shall inspect piece by piece. Those who pass shall be batched separately and delivered.