

Translated English of Chinese Standard: GB/T21652-2017
www.ChineseStandard.net → Buy True-PDF → Auto-delivery.
Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 77.150.30

H 62

GB/T 21652-2017

Replacing GB/T 21652-2008

Copper and copper alloy wire

铜及铜合金线材

Issued on: May 31, 2017

Implemented on: December 01, 2017

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine;
Standardization Administration of the People's Republic of China.**

Table of Contents

Foreword	3
1 Scope	5
2 Normative references	5
3 Requirements	6
4 Test methods	24
5 Inspection rules	26
6 Marking, packaging, transportation, storage and quality certificate.....	28
7 Order form (or contract) contents	29

Copper and copper alloy wire

1 Scope

This Standard specifies the requirements, test methods, inspection rules, marking, packaging, transportation, storage, quality certificate and order form (or contract) for copper and copper alloy wires.

This Standard applies to round, square, regular hexagonal copper and copper alloy wires (hereinafter referred to as wires) for general purposes.

2 Normative references

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

GB/T 228.1-2010, Metallic materials - Tensile testing - Part 1: Method of test at room temperature

GB/T 230.1, Metallic materials - Rockwell hardness test - Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)

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

GB/T 238, Metallic materials - Wire - Reverse bend test

GB/T 239.1, Metallic materials - Wire - Part 1: Simple torsion test

GB/T 239.2, Metallic materials - Wire - Part 2: Reverse torsion test

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 2976, Metallic materials - Wire - Wrapping test

GB/T 4340.1, Metallic materials - Vickers hardness test. Part 1: Test method

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

GB/T 5231, Designation and chemical composition of wrought copper and copper alloys

GB/T 8888, Wrought heavy non-ferrous metal products - packing, marking, transportation, storing and certificate of quality

GB/T 10567.2, Wrought copper and copper alloy - Detection of residual stress - Ammonia test

GB/T 10573, Tensile testing method for fine wire of nonferrous metals

GB/T 23606, Copper-hydrogen embrittlement test method

GB/T 26303.2, Measuring methods for dimensions and shapes of wrought copper and copper alloy - Part 2: Rod, wire and profile

YS/T 336, Methods of fracture test for tube and rod of copper and copper alloys, nickel and nickel alloys

YS/T 347, Copper and copper alloys - Estimation of average grain size

YS/T 482, Methods for analysis of copper and copper alloys - The atomic emission spectrometry

YS/T 483, Methods for analysis of copper and copper alloys - X-Ray fluorescence spectrometric (wavelength dispersive)

YS/T 668, Sampling method of physical and chemical testing for copper and copper alloys

YS/T 815, Preparation method of test pieces for mechanical and technological properties of copper and copper alloys

3 Requirements

3.1 Product classification

3.1.1 Designation, state, specification

The designation, state and specification of the product shall comply with the provisions in Table 1. The cross-section shape of the product is shown in Figure 1.

3.1.2 Examples of marking

The product is marked in the order of product name, standard number, designation (code), state, precision and specification. Examples of marking are as follows:

Example 1: The round wire, made of H65 (C27000), state H01, high precision grade, diameter 3.0 mm, is marked as:

Round wire GB/T 21652-H65H01 high- ϕ 3.0

TU0, TU1, TU2 wires shall be subjected to a hydrogen embrittlement test, after which there shall be no hydrogen embrittlement.

3.6 Reverse bend test

3.6.1 Hard (H04) silicon bronze and tin bronze wires shall be subjected to the reverse bend test, where the number of bending times shall not be less than 3 times, and there shall be no cracks at the bending place.

3.6.2 Other wires can also be subjected to the reverse bend test, the requirements of which shall be negotiated between the supplier and the buyer.

3.7 Torsion test

Wires can be subjected to the torsion test, where the requirements shall be negotiated between the supplier and the buyer.

3.8 Wrapping test

The silicon bronze and tin bronze wires used as springs shall be subjected to a wrapping test, where they shall be wound 10 times on a cylinder twice the diameter of the wire without cracking.

3.9 Residual stress

3.9.1 Hard (H04) silicon bronze and tin bronze wires shall be inspected for residual stress.

3.9.2 Other wires can also be inspected for residual stress.

3.10 Fracture inspection

The fracture of the wire shall be dense, without shrinkage, while slight defects that do not affect the use are allowed. The size and quantity of the defects shall comply with the provisions of YS/T 336.

3.11 Grain size

Wires can be tested for grain size, where the requirements shall be negotiated between the supplier and the buyer.

3.12 Surface quality

The surface of the wire shall be smooth and clean, and there shall be no defects that affect its use.

3.13 Coil weight

3.13.1 The wire coil weight shall meet the requirements in Table 5.

4.10 Grain size

The grain size test method of the wire shall be carried out according to the provisions of YS/T 347.

4.11 Surface quality

The surface quality of the wire shall be inspected visually.

4.12 Coil weight

The wire coil weight shall be detected with a measuring tool of corresponding precision.

5 Inspection rules

5.1 Inspection and acceptance

5.1.1 The wire shall be inspected by the technical supervision department of the supplier to ensure that the product quality complies with the provisions of this Standard and the order form (or contract); the quality certificate shall be filled.

5.1.2 The buyer shall inspect the received products according to the provisions of this Standard and the order form (or contract). If the inspection result is inconsistent with the provisions of this Standard and the order form (or contract), it shall be submitted to the supplier in written form within 3 months from the date of receipt of the product, and the supplier and the buyer shall negotiate to resolve it. If arbitration is required, sampling for arbitration shall be carried out jointly by both the supplier and the buyer.

5.2 Batch

Wires shall be submitted in batches. Each batch shall consist of products of the same designation, state and specification, and the weight of each batch shall not exceed 1 500 kg.

5.3 Inspection items

5.3.1 Each batch of wires shall be inspected for chemical composition, external dimensions and deviation, tensile strength and elongation after fracture, fracture, surface quality and coil weight.

5.3.2 For TU0, TU1 and TU2 wires, hydrogen embrittlement test shall be carried out for each batch.

5.3.3 For Hard (H04) silicon bronze and tin bronze wires, each batch shall be subjected to the reverse bend test; when required by the buyer, each batch of other wires except for Hard (H04) silicon bronze and tin bronze shall also be subjected to the reverse bend test.

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----