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NONFERROUS INDUSTRY STANDARD
OF THE PEOPLE'S REPUBLIC OF CHINA

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**Copper and copper alloy strips for automotive terminals and
connectors**

汽车端子连接器用铜及铜合金带

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Copper and copper alloy strips for automotive terminals and connectors

1 Scope

This Standard specifies the requirements, test methods, inspection rules, marking, packaging, transportation, storage, quality certificate and order (or contract) contents of copper and copper alloy strips for automotive terminals and connectors.

This Standard applies to copper and copper alloy strips used in the manufacture of automotive terminals and connectors.

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

GB/T 232, *Metallic materials -- Bend testing method*

GB/T 351, *Metallic Materials -- Resistivity Measurement Method*

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, transporting, storing and quality certificate*

GB/T 26303.3, *Measuring methods for dimensions and shapes of wrought copper and copper alloys -- Part 3: Sheets and strips*

YS/T 478, *The method for electrical conductivity measurement of copper and copper alloys by use of eddy current*

YS/T 482, *Methods of analysis of copper and copper alloys -- spark discharge*

atomic emission spectrometry

YS/T 483, *Copper and Copper Alloy Analysis Method X-ray Fluorescence Spectrometry (Wavelength Dispersion Type)*

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

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

YS/T 910, *Determination of copper content for brass. Iodimetry*

3 Requirements

3.1 Product classification

3.1.1 Designation, state and specification

The designation, state and specifications of the strip shall comply with the provisions of Table 1.

3.1.2 Marking example

Product markings are indicated in the order of product name, standard number, designation (or code), state and specification. The marking examples are as follows:

Example: Strip made of TFe2.5 (C19400), H04 state, 0.25 mm thick and 30 mm wide is marked as:

Copper strip YS/T 1041-TFe2.5H04-0.25×30

or

Copper strip YS/T 1041-C19400H04-0.25×30

3.7 Surface quality

3.7.1 The surface of the strip should be smooth and clean, without any defects that may affect its use.

3.7.2 Each roll of strip should be rolled tightly and evenly.

4 Test methods

4.1 Chemical composition

The chemical composition analysis of the strip shall be carried out in accordance with the provisions of GB/T 5121 or YS/T 482 or YS/T 483 or YS/T 910. During arbitration, it shall be carried out in accordance with the provisions of GB/T 5121.

4.2 Dimensions and their tolerances

The strip's outer dimensions and allowable deviations shall be tested in accordance with the provisions of GB/T 26303.3.

4.3 Mechanical properties

The tensile test of the strip shall be carried out in accordance with the provisions of GB/T 228.1-2010. The specimen number is P5 in Annex B of GB/T 228.1-2010. The Vickers hardness test shall be carried out in accordance with the provisions of GB/T 4340.1.

4.4 Electrical properties

The electrical property test of the strip shall be carried out in accordance with the provisions of GB/T 351 or YS/T 478. The arbitration test shall be carried out in accordance with the provisions of GB/T 351.

4.5 Bending properties

The bending test method of the strip is carried out in accordance with the provisions of GB/T 232. The rolling direction of the longitudinal bending specimen is perpendicular to the axis direction of the bending pressure head. The rolling direction of the transverse bending specimen is parallel to the axis direction of the bending pressure head. The schematic diagrams of bending in different directions are shown in Figures 1 and 2.

4.6 Surface quality

The surface quality of the strip shall be inspected visually.

5 Inspection rules

5.1 Inspection and acceptance

5.1.1 The product shall be inspected by the supplier's technical supervision department to ensure that the product quality complies with this standard and the requirements of the purchase order (or contract). A quality certificate shall be filled in.

5.1.2 The purchaser shall re-test the received products in accordance with the provisions of this Standard and the order form (or contract). If the re-test results are inconsistent with the provisions of this Standard and the order form (or contract), they shall be submitted to the supplier in writing and resolved through negotiation between the supplier and the purchaser. Objections to surface quality and dimensional deviation shall be raised within 1 month from the date of receipt of the product. Other quality objections shall be raised within 3 months from the date of receipt of the product. If arbitration is required, arbitration sampling shall be conducted jointly by the supplier and the purchaser at the purchaser's side.

5.2 Batching

Strips should be submitted for acceptance in batches. Each batch should consist of the same designation, state and specification. The weight of each batch should not exceed 5000 kg (if it is the same melting time, the batch size may not be limited).

5.3 Inspection items

The inspection items for each batch of strip materials shall be carried out in accordance with the provisions of Table 9.

5.4 Sampling

Strip sampling shall comply with the provisions of Table 10. The sampling method shall be carried out in accordance with the provisions of YS/T 668. The preparation of mechanical properties and process properties specimens shall be carried out in accordance with the provisions of YS/T 815.

5.5 Determination of test results

5.5.1 If the chemical composition is unqualified, the batch of strips shall be judged as unqualified.

5.5.2 If the outer dimensions, allowable deviations and surface quality of the strip fail to meet the standards, the roll will be deemed unqualified.

5.5.3 When there are samples that are unqualified in the test results of tensile properties, Vickers hardness, electrical properties and bending properties, double the number of specimens should be taken from the batch of strips (including the roll of strips that failed the original test) for repeated testing. If all the repeated test results are qualified, the whole batch of products is judged to be qualified. If there are still specimens that are unqualified in the repeated test results, the batch of strips is judged to be unqualified, or the supplier shall test each roll and deliver the qualified ones.

6 Marking, packaging, transportation, storage and quality certification

The product's marking, packaging, transportation, storage and quality certificate shall comply with the provisions of GB/T 8888.

7 Contents of order (or contract)

The order form (or contract) for the products listed in this standard shall include the following:

- a) Product name;
- b) Designation;

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