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

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Recycling materials for copper

再生铜原料

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1 Scope

China's national standard for copper recycling materials. It specifies the terms and definitions, the classification and the technical requirements. Copper is the metal for which recycling works best: it can be remelted indefinitely without losing its properties, and secondary production uses a fraction of the energy of winning it from ore. China is by a wide margin the world's largest consumer and importer of copper scrap, which is what makes this standard commercially consequential - it defines the grades against which imported and domestic material is bought and, since China's restrictions on importing waste tightened, what may be imported at all. The classification distinguishes the clean high grade material that can be remelted directly - bare bright wire, clean tube and busbar - from the mixed and contaminated grades that must be refined, and the technical requirements fix the permitted content of other metals, of insulation and of moisture for each.

This document specifies the classification, technical requirements, test methods, inspection rules, factory inspection, transportation, storage and accompanying documents of recycling materials for copper (hereinafter referred to as "raw materials"). This document applies to recycling materials for copper.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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 5085.1, Identification standards for hazardous wastes - Identification for corrosivity

GB 5085.2, Identification standards for hazardous wastes - Screening test for acute toxicity

GB 5085.3, Identification standards for hazardous wastes - Identification for extraction toxicity

GB 5085.4, Identification standards for hazardous wastes - Identification for ignitability

GB 5085.5, Identification standards for hazardous wastes - Identification for reactivity

GB 5085.6, Identification standards for hazardous wastes - Identification for toxic substance content

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

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values
SN/T 0570-2022, Rules for the inspection of radioactive contamination of imported recycling materials

7.4.2 If any of the inspection results for appearance quality, radioactive contamination, hazardous wastes, or other requirements do not meet the requirements, judge the batch of raw materials not to meet the requirements of this document.

7.4.3 If any of the inspection results for foreign substances and coatings, other volatile substances, and physical quantity of copper are unqualified, double the number of representative samples shall be taken from the batch of raw materials and repeated tests shall be conducted on the unqualified items. If all the repeated test results are qualified, judge the batch of raw materials to be qualified, otherwise, judge that the batch of raw materials does not meet the requirements of this document.

8 Factory inspection

The purchaser shall conduct factory inspection of raw materials in accordance with Appendix C.

9.1 Transportation and storage

9.1.1 During transportation, bulk raw materials of different categories and names shall not be mixed.

9.1.2 In order to make full use of shipping space, when raw materials of different categories and names are packaged independently, two or more raw materials of different names may be mixed in one vehicle, ship or container, but they shall be placed according to categories and clearly marked.

9.1.3 The transportation and storage of raw materials shall be protected from rain and snow.

9.2 Accompanying documents Each batch of raw materials shall be accompanied by accompanying documents, which shall indicate.

- a) name of the supplier;
- b) raw material category, name or code;
- c) gross weight and net weight;
- d) foreign substances and coatings;
- e) other volatile substances;
- f) physical quantity of copper;

Appendix B

(Normative) Detection methods for volatile substances Warning - This method has the risk of high temperature scalds and burns. Operators shall wear high temperature resistant gloves, protective masks and protective clothing. The laboratory shall have good ventilation measures. B.1 Method summary Heat the sample to a fixed temperature and keep it at this temperature until constant weight is reached; measure the mass loss to calculate the volatile substance. B.2 Instruments and apparatuses B.2.1 Drying oven. The operating temperature can reach 500 °C, with an accuracy of ± 5 °C. B.2.2 Sample plate. B.2.3 Electronic scale. The accuracy is

0.01 g. B.2.4 Desiccator. B.3 Sampling In each inspection batch, take 2 representative raw material samples, each weighing not less than

1.0 kg. The sample can be divided into several independent test samples. B.4 Test procedure B.4.1 After the sample pan has reached constant weight at 105 °C, place it in a drying oven and cool it to room temperature. Weigh the mass and record it as m_0 . B.4.2 Place the sample in a sample pan and flatten it; weigh the mass of the sample pan containing the sample and record it as m_5 . B.4.3 Place the sample pan containing the representative sample in a drying oven; raise the temperature to 105 °C; keep it warm for 1 hour. B.4.4 Take out the sample pan containing the representative sample from the drying oven and place it in a desiccator. After cooling to room temperature, weigh the mass of the sample pan containing the representative sample and record it. B.4.5 Repeat B.4.3 and B.4.4. Record the mass of the sample pan containing the representative sample weighed for the last time as m_6 . B.4.6 Place the sample pan containing the representative sample from the last weighing in B.4.5 into a drying oven; heat it to 350 °C; keep it warm for 35 minutes. B.4.7 Take out the sample pan containing the representative sample from the drying oven and place it in a desiccator. After cooling to room temperature, weigh the mass of the

sample pan containing the representative sample and record it. B.4.8 Repeat B.4.6 and B.4.7 until the difference between the two weighing results is no more than

0.05 g. Otherwise, repeat B.4.6 and B.4.7, and record the mass of the sample pan containing the representative sample in the last weighing as m_7 . B.5 Test data processing Calculate other volatile substances (wV) of the sample according to Formula (B.1), and express the value in %. Where. m_6 - mass of the representative sample and the sample pan weighed for the last time in step B.4.5, in grams (g); m_7 - mass of the representative sample and the sample pan weighed for the last time in step B.4.8, in grams (g); m_5 - mass of the initial sample and the sample pan in step B.4.2, in grams (g); m_0 - mass of the sample pan in step B.4.1, in grams (g). The final result of other volatile substance content of raw materials is the average of the test results of 2 representative samples. C.3 Inspection methods C.3.1 Metal recovery rate The metal recovery rate of raw materials shall be tested in accordance with the provisions of Appendix D. C.3.2 Copper content The copper content of the raw materials shall be determined as follows:

a) When on-site inspection is required, a portable rapid spectrometer may be used to conduct a preliminary inspection of the chemical composition of the raw materials; when verification is required, a copper content sample shall be prepared according to Appendix D and tested in accordance with the provisions of GB/T 5121.1 or YS/T 483.

b) When arbitration is required, it shall be conducted in accordance with the provisions of GB/T 5121.1. C.4 Determination of inspection results If any inspection result of copper content and metal recovery rate is unqualified, double the number of representative samples shall be taken from the batch of raw materials and repeated tests shall be conducted on the unqualified item. If all the repeated test results are qualified, judge the batch of raw materials to be qualified; otherwise, judge that the batch of raw materials does not meet the requirements of this document.