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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 13587-2020

Replacing GB/T 13587-2006

Scraps of copper and copper alloy

铜及铜合金废料

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1 Scope

GB/T 13587-2020 is the Chinese national standard on scraps of copper and copper 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 29 September 2020 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 August 2021. Classification: ICS 77.150.30, CCS H62. 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 standard specifies the classification, technical requirements, test methods, inspection rules, markings, packaging, transportation, storage, and purchase order (or contract) content of scraps of copper and copper alloy (hereinafter referred to as copper scrap). This standard applies to scraps of copper and copper alloy.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

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

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

GB/T 27683 Specifications for recovery of cutting filings of free-cutting copper alloys YS/T 482 Method 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)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Scraps of copper and copper alloy Materials that contain copper and copper alloy components that are produced during the production process, or lose their original purpose or use function during consumption and use, which can be recycled and reused by smelting enterprises or processing and manufacturing enterprises.

3.2 Foreign material Non-metallic substances mixed into copper scrap during production, collection, packaging and transportation.

Note: Including waste wood, waste paper, waste plastics, waste rubber, waste glass, rocks, powders (dust, sludge, crystalline salt, metal oxides, fiber powder, etc.) which have a particle size of not greater than 2 mm, etc., excluding packaging and other substances used during transportation.

3.3 Non-copper metal Metal substances other than copper and copper alloys mixed into copper scrap during production, collection, packaging and transportation.

Note: Generally, it includes free iron, aluminum and aluminum alloy, zinc and zinc alloy, etc.

3.4 Plating material The material plated on the surface of copper scrap.

Note: Generally, it includes nickel, tin, zinc, aluminum, chromium, etc.

3.5 Moisture In the process of production, collection, packaging, storage and transportation, the water and emulsion attached to the copper scraps.

3.6 Representative sample A certain amount of physical objects that are extracted from the entire batch of copper scraps and can fully represent the attributes of copper scraps.

3.7 before inspection, then inspected by sensory organs.

6.2 Radioactive contaminants The radioactive contaminants of copper scrap can be inspected with reference to Appendix A.

6.3 Hazardous substances Hazardous substances in copper scrap are inspected by the sensory organs.

6.4 Chemical composition The chemical composition analysis method is carried out in accordance with the requirements of GB/T 5121 (all parts), YS/T 482 or YS/T 483. The arbitration inspection shall be conducted in accordance with the provisions of GB/T 5121 (all parts).

7 Inspection rules

7.1 Inspection process The copper scrap specified in this standard can be inspected with reference to the process of Appendix C.

7.2 Inspection and acceptance The purchaser shall inspect the copper scrap received according to this standard. If the inspection result does not conform to the provisions of this standard and the purchase order (or contract), it shall be submitted to the supplier in written form and the two parties shall negotiate and resolve. If arbitration is required, a third party recognized by the supplier and the buyer can be entrusted to conduct it.

7.3 Group-batching Copper scraps shall be submitted for inspection in batches. Each batch shall be composed of copper scraps of the same category, name and grade; the batch weight shall not exceed 50 t.

Appendix A

(Informative) Inspection method of radioactive contamination A.1 Inspection instrument The inspection instrument shall meet the requirements of GB 18871, GB/T 12162.3, GB/T 5202. A.2 Measurement of external radiation penetration radiation dose rate A.2.1 Measurement of natural environmental radiation background A.2.1.1 Before measuring the external radiation penetration radiation dose rate, it shall first measure and determine the local natural environmental radiation background value. A.2.1.2 Select 3 ~ 5 points (can be used as fixed survey points) on a flat open ground without radioactive contamination that can represent the local normal natural radiation background state as the measurement points. A.2.1.3 Place the measuring probe of the measuring instrument at a height of 1 m above the measuring point to measure the penetration radiation dose rate of the external radiation. Read the measured value once every 10 s. Take the average of the 10 readings as the measured value of this point. Take the arithmetic average of the measured values of each measuring point as the average value of normal natural radiation. A.2.2 Tour inspection A.2.2.1 The copper scrap shall be tour-inspected for radioactive contamination. During the tour inspection, the measuring instrument shall be as close as possible to the surface of the measured object or the surface of the container, car body, warehouse, etc., to perform the tour inspection of the surface of the object to be measured. A.2.2.2 When it is found that the radioactivity has obviously exceeded the management limit of 3 test indicators during the tour inspection, it is judged as unqualified. When radioactive contamination has been found to exceed the management limit of 3 detection indicators, no sub-inspection or selection will be carried out. A.2.3 Distribution of test points K1 - The

scale factor of the measuring instrument (given by the instrument's calibration certificate); Keta - The efficiency factor of the measuring instrument; - The reading of the measured value of the measuring instrument, in microGy per hour (μGy/h). A.3 Inspection of alpha, beta surface contamination A.3.1 Testing requirements Generally, the tour inspection and point arrangement measurement of the surface contamination level of alpha and beta shall be carried out at the same time as the measurement of the external radiation penetration radiation dose rate. If necessary, the tour inspection and point arrangement measurement of the item can also be carried out separately. A.3.2 Test point layout For the detection of alpha and beta surface contamination levels, the test points shall be arranged according to the provisions of A.2.3; the measurement area shall be greater than 300 cm2. A.3.3 Efficiency measurement of alpha surface contamination measuring instrument A.3.3.1 Use the alpha surface contamination measuring instrument to measure the count N0,alpha of the natural environment radiation background for 10 minutes. A.3.3.2 Determine the instrument calibration source for 5 min, to get count N1, alpha. A.3.3.3 Reverse the probe of the instrument by 180° and measure it for another 5 minutes, to obtain the count N2,alpha of the calibration source (considering the unevenness of the plane source). A.3.3.4 Calculate the efficiency factor eta4pi(alpha) of the instrument according to formula (A.3): Where: 4pi(alpha) - The efficiency factor of the instrument; N1,alpha - The Count measured in the previous 5 minutes of the calibration

Appendix B

(Normative) Preparation of chemical composition specimen and testing method of metal recovery rate B.1 Method summary Take a sample of copper scrap. After pretreatment, put it into the melting furnace, to fully melt it. Remove the slag. Prepare a chemical composition specimen. Wait the melt to be solidified. Prepare an ingot. The ratio of the sum of the weight of the obtained ingot and the weight of the chemical composition specimen to the weight of the sample is the metal recovery rate. B.2 Reagents or materials B.2.1 Casting covering agent (such as charcoal, graphite flake). B.2.2 Flux (such as borax, salt). B.3 Instruments B.3.1 Electric melting furnace. B.3.2 Graphite crucible. B.3.3 Mould. B.3.4 Electronic scale (precision