YS

NONFERROUS METALS INDUSTRY STANDARD

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High purity tellurium

高 纯 碲

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Table of Contents

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1 Scope

This standard specifies the requirements, inspection methods, inspection rules, packaging, marking, transportation, storage, quality certificate and contract (or purchase order) contents of high-purity tellurium.

This standard applies to high-purity tellurium, which is mainly used in infrared detectors, infrared lasers, telluride optical fibers, solar cells, gamma-ray detectors, ohmic contacts, semiconductor cooling elements, copier photosensitive elements, perpendicular magnetic recording materials and other fields.

2 Normative references

The following documents are essential for the application of this document. For any dated referenced document, only the dated version applies to this document. For any undated referenced document, the latest version (including all amendments) applies to this document.

GB/T 8170-2008 Rules of rounding off for numerical values & expression and judgment of limiting values

3 Requirements

3.1 Product categories

High-purity tellurium is classified into two grades according to its chemical composition: Te99.999 and Te99.9999.

3.2 Chemical composition

3.2.1 The chemical composition of high-purity tellurium shall comply with the requirements of Table 1.

3.2.2 The rounding off of the last digit value of high-purity tellurium impurities and the determination of the rounded-off value shall be carried out in accordance with Chapter 3 and 4.3.3 of GB/T 8170-2008, respectively.

3.3 High-purity tellurium shall be in the form of rectangular trapezoid or powder particles. The weight and particle size shall be determined by negotiation between the supplier and the buyer.

3.4 Appearance quality

High-purity tellurium shall be clean and free of inclusions visible to the naked eye.

3.5 Others

If the purchaser has other requirements for the chemical composition and appearance quality of high-purity tellurium, they shall be determined through negotiation between the supply and demand parties.

4 Test methods

4.1 The arbitration analysis method for the chemical composition of high-purity tellurium shall be determined by negotiation between the supplier and the buyer.

4.2 The weight of high-purity tellurium shall be checked by weighing.

4.3 The appearance quality of high-purity tellurium shall be inspected by visual inspection.

5 Inspection rules

5.1 Inspection and acceptance

5.1.1 High-purity tellurium shall be inspected by the supplier's technical supervision department to ensure that the product quality complies with this standard or the provisions of the contract (or purchase order), and a quality certificate shall be completed.

5.1.2 The purchaser may inspect the received products in accordance with the provisions of this standard. If the inspection results are inconsistent with the provisions of this standard or the contract (or purchase order), the purchaser shall raise the issue with the supplier within 30 days of receipt of the products for resolution through negotiation between the supplier and the purchaser. If arbitration is required, sampling shall be conducted on the purchaser's site jointly by the purchaser and the supplier.

5.2 Batching

High-purity tellurium shall be submitted for inspection in batches. One batch shall consist of tellurium ingots of the same grade cast from the same batch of raw materials, with each batch not exceeding 100 kg.

5.3 Inspection items

Each batch of high-purity tellurium shall be inspected for chemical composition, appearance quality and weight of the tellurium ingots.

5.4 Sampling and sample preparation

5.4.1 Sampling and sample preparation for chemical composition of high-purity tellurium ingots (Te99.999)

5.4.1.1 Sampling quantity: Randomly select 20% of the total number of tellurium ingots as sample ingots. The total number of sample ingots shall be a multiple of 6 to facilitate grouping. If the number of ingots after grouping is less than 6, they shall be supplemented from the tellurium ingots, but they shall not be discarded.

5.4.1.2 Sampling method: Drill the ingots in groups of 6 and take samples. No lubricant shall be used and the drilling speed shall not cause oxidation of the specimen. The surface of the sample shall be removed and the drilling depth shall be between one-half and two-thirds of the ingot thickness.

Drilling method: Use a tungsten carbide drill with a diameter of 6~10 mm to take samples. Arrange the casting surface A and the bottom surface B in sequence to form a rectangle. Draw two diagonal lines on the rectangle. The two points where the two

diagonal lines intersect with the longitudinal center line of each ingot are the sampling points of the ingot, as shown in Figure 1.

5.4.1.3 Preparation of test specimens: Collect the drilled powder sample, mix thoroughly, and then package it. The specimen shall be no less than 100 g and divided into three bags; each bag shall be no less than 30 g.

5.4.2 Sampling for chemical composition of high-purity tellurium ingot (Te99.9999)

Remove 10%~15% of the head of each ingot and 20%~25% of the tail, take samples at the head, middle and tail of the middle section, grind them into powder as test specimens.

5.4.3 Sampling for chemical composition of high-purity tellurium powder and tellurium granules (Te99.999)

Use a polyvinyl chloride sampler to insert two-thirds of the packaging drum to take the sample, and place the sample in a sample bag; the sample shall be no less than 300 g, mixed well and divided into three portions.

5.4.4 Sampling for chemical composition of high-purity tellurium powder and tellurium granules (Te99.9999)

Insert a polytetrafluoroethylene sampling spoon into two-thirds of the product packaging bottle to take the sample, and place the sample of no less than 30 g in a sample bottle; mix well and divide it into corresponding portions according to test needs.

5.5 Determination of test results

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