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

GB/T 11070-2017

Replacing GB/T 11070-2006

Reduced germanium ingot

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 11070-2006 "reduction germanium ingot." This standard compared with GB/T 11070-2006, the main technical changes as follows:

- Remove normative references GB/T 1551, increase GB/T 26074, YS/T 602;
- Raw material requirements amended as "raw materials for the production of germanium ingot should be consistent with the provisions of GB/T 11069 high purity germanium dioxide";
- Preparation of the regional germanium ingot electrical performance requirements amended to "RGe-0 reduction germanium ingot by directional crystallization and 6 after zone melting obtained after purification Melting germanium ingot, the conductivity type is N type, the resistivity greater than $47\Omega \cdot \text{cm}$ portion should account for more than 60% germanium ingot length or By both supply and demand sides to determine ";
- Remove "Dimensions";
- The 5.4.1 "RGe-0 product batch is not greater than 50kg" to "product weight not more than 100kg." This standard is proposed by China Nonferrous Metals Industry Association. This standard by the National Non-ferrous Metal Standardization Technical Committee (SAC/TC243) centralized. This standard was drafted unit. Nanjing, germanium technology limited liability company, Yunnan Lincang Xin Yuan Germanium Industry Co., The main drafters of this standard. Liu Xinjun, universal Kun, Ke Zun Bin. This standard replaces the standards previously issued as.
- GB/T 11070-1989, GB/T 11070-2006. Germanium ingot reduction

1 Scope

China's national standard for reduced germanium ingot - the second stage of the germanium production chain, the metal obtained by reducing high purity germanium dioxide with hydrogen and casting it into an ingot. It sits between GB/T 11069, which covers the

oxide it is made from, and GB/T 11071, which covers the zone-refined ingot made from it: the three standards together describe one process in three steps, and each is written for the stage that follows rather than for a final use. It specifies the requirements, the test methods, the inspection rules, and the marking, packaging, transport, storage and quality certificate for reduced germanium ingot. It applies to the germanium ingot prepared by hydrogen reduction from high purity germanium dioxide, the product being used mainly for the preparation of zone-refined germanium ingot. That last sentence is what shapes the requirements. Because this material is an intermediate, what matters is not that it is fit for an optical or semiconductor use - it is not yet - but that it can be refined further to the level those uses need. The specification is therefore of the impurities that zone refining cannot remove, or removes only with great difficulty, alongside those it handles easily: the distinction determines whether a batch will reach specification at the next step or whether it will absorb refining capacity and still fail. Around the chemical requirements sit the appearance and form of the ingot, its mass, and the surface condition, since a contaminated surface reintroduces at the next stage what the reduction just removed. The test methods, the inspection rules and the quality certificate close the document. Issued on 14 October 2017 and in force since 1 May 2018, it replaces GB/T 11070-2006.

This standard specifies the requirements of germanium ingot reduction, test methods, inspection rules and signs, packaging, transportation, storage and quality certificates. This standard applies to high purity germanium dioxide as raw material, hydrogen reduction method prepared germanium ingot. The product is mainly used for preparation of zone germanium ingot.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 1550 extrinsic semiconductor conductive material test methods

GB/T 11069 high purity germanium dioxide

GB/T 26074 germanium single crystal resistivity DC four probe measurement method YS/T 602 zone germanium ingot resistivity test method two probe method

3 Requirements

3.1 product classification Reduction germanium ingot according to the resistivity is divided into two grades. RGe-0, RGe-1. RGe- Said reduction germanium ingot Arabic numerals, said the product level

3.2 raw materials Raw materials for the production of germanium ingot should be consistent with the provisions of GB/T 11069 high purity germanium dioxide.

3.3 Electrical properties

3.3.1 germanium ingot recovery conductivity type is N type, resistivity should comply with the provisions of Table 1. Table

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