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

GB/T 16479-2020

Replacing GB/T 16479-2008

Light rare earth carbonate

碳酸轻稀土

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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 16479-2008 "Light rare earth carbonate". Compared with GB/T 16479-2008, in addition to editorial modifications, the main technical changes are as follows: - modified text description of the scope (see Clause 1 of this Edition); - modified normative references (see Clause 2 of this Edition); - added product classification (see 3.1 of this Edition); - added character designations (see 3.1, 3.2 of this Edition); - added content requirements for lanthanum oxide (La_2O_3) in all product designations (see 3.2 of this Edition); - added radioactivity requirements for product designations ($(\text{LaCe})_x(\text{CO}_3)_y$ -65Ce, $(\text{LaCePr})_x(\text{CO}_3)_y$ -58Ce (see 3.2 of this Edition); - added content requirements for praseodymium oxide (Pr_6O_{11}), neodymium oxide (Nd_2O_3), manganese oxide (MnO_2), sodium oxide (Na_2O), and lead oxide (PbO) of product designation $(\text{LaCe})_x(\text{CO}_3)_y$ -65Ce (see 3.2 of this Edition); - modified some content requirements for product designation $(\text{LaCe})_x(\text{CO}_3)_y$ -65Ce; modified the total rare earth (REO) content from not less than 44% to not less than 45%, cerium oxide (CeO_2) content from not less than 62% to 62%~68%, sulfate (SO_4^{2-}) content from not more than 0.05% to not more than 0.03%, chloride (Cl^-) content from not more than 0.2% to not more than 0.15%, calcium oxide (CaO) content from not more than 0.5% to not more than 0.05%, magnesium oxide (MgO) content from

not more than 0.1% to not more than 0.01% (see

3.2 of this Edition,

3.1 of Edition 2008); - added content requirements for neodymium oxide (Nd_2O_3), sodium oxide (Na_2O) and lead oxide (PbO) of product designation $(\text{LaCePr})_x(\text{CO}_3)_y\text{-58Ce}$ (see

3.2 of this Edition); - modified some content requirements for product designation $(\text{LaCePr})_x(\text{CO}_3)_y\text{-58Ce}$; modified the total rare earth (REO) content from not less than 44% to not less than 45%, praseodymium oxide (Pr_6O_{11}) content from not less than 4% to 4%~7%, content of other rare earth impurities from the margin to not more than 0.3%, calcium oxide (CaO) content from not more than 0.5% to not more than 0.2%, alumina (Al_2O_3) content from not more than 0.05% to not more than 0.015% (see

3.2 of this Edition,

3.1 of Edition 2008); - deleted content requirements for magnesium oxide (MgO) of product designation $(\text{LaCePr})_x(\text{CO}_3)_y\text{-58Ce}$ (see

3.1 of Edition 2008); - modified some content requirements for product designation $(\text{LaCePrNdEu})_x(\text{CO}_3)_y\text{-0.2Eu}$; modified cerium oxide (CeO_2) content from not less than 48% to 48%~52%, praseodymium oxide (Pr_6O_{11}) content from not less than 5% to 4%~6%, neodymium oxide (Nd_2O_3) content from not less than 15% to not less than 14.2%, Europium oxide (Eu_2O_3) content from 0.18% to not more than 0.175%, alumina (Al_2O_3) content from not more than 0.07% to not more than 0.06% (see

3.2 of this Edition,

3.1 of Edition 2008); - added fluorine (F-) content requirements for product designation $(\text{LaCePrNdEu})_x(\text{CO}_3)_y\text{-0.2Eu}$ (see

1 Scope

China's national product standard for light rare earth carbonate - the intermediate in which the light rare earths leave the concentrate and enter the separation plant. It specifies the technical requirements, the test methods, the inspection rules, and the marks, packaging, transport, storage and quality certificate, and it applies to light rare earth carbonate prepared by chemical processing of mixed bastnaesite-monzite concentrate, used mainly to separate the single rare earths and to make rare earth polishing materials, catalytic materials and mixed rare earth metals. Carbonate is the form in which rare earths are traded in bulk because it precipitates cleanly, filters and dries without special handling, and dissolves readily in acid when the next stage needs it. What the buyer is paying for is the rare earth oxide content and the distribution among the light elements - lanthanum, cerium, praseodymium, neodymium - and the grades in the standard are named accordingly, by the total oxide content and by the fraction of a named element within it. The impurity limits are the other half of the specification, and the 2020 edition tightened them against the 2008

edition it replaces: the chloride limit was cut, along with the limits on the non-rare-earth oxides that carry through from the leach. Those matter because chloride corrodes downstream equipment and because non-rare-earth oxides consume reagent and dilute the product without contributing value. The document also fixes the moisture and the loss on ignition, which decide how much of a shipped tonne is actually product, the sampling and acceptance rules, and the certificate that must accompany a lot. Issued on 19 November 2020 and in force since 1 October 2021.

This Standard specifies technical requirements, test methods, inspection rules, marks, packaging, transport, storage and quality certificates for light rare earth carbonate. This Standard is applicable to light rare earth carbonate prepared by chemical method with bastnaesite-monazite mixed concentrate as raw material. It is mainly used to separate single rare earths, prepare rare earth polishing materials, catalytic materials, and mixed rare earth metals.

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 8170, Rules of rounding off for numerical values & expression and judgement of limiting values

GB/T 12690 (all parts), Chemical analysis methods of non-rare earth impurities in rare earth metals and the oxides

3 Technical requirements

3.1 Product classification The products are divided into three designations. $(\text{LaCe})_x(\text{CO}_3)_y-65\text{Ce}$, $(\text{LaCePr})_x(\text{CO}_3)_y-58\text{Ce}$, $(\text{LaCePrNdEu})_x(\text{CO}_3)_y-0.2\text{Eu}$, according to chemical composition.

3.2 Chemical composition The chemical composition of the product shall meet the requirements of Table

1.If the purchaser has special requirements for the product, the supplier and the purchaser may negotiate separately.

3.3 Appearance quality

3.3.1 The product is in the form of powders.

4.1 Chemical composition

4.2 Numerical rounding Numerical rounding is carried out in accordance with the provisions

of GB/T 8170.

4.3 Appearance quality Under natural scattered light, conduct visual inspection.

5.1 Inspection and acceptance

5.1.1 The product is inspected by the supplier's technical supervision department to ensure that the quality of the product meets the requirements of this standard and fill in the quality certificate.

5.1.2 The purchaser shall inspect the products received. If the inspection result

5.2 Batching Products shall be submitted for inspection in batches. Each batch shall be composed of products of the same designation.

5.3 Inspection items Each batch of products shall be inspected for chemical composition and appearance quality.

5.5 Determination of inspection results

5.5.1 When the arbitration analysis result of chemical composition does not conform to the provisions of this Standard, then take double samples from the batch of products to repeat the inspection on the nonconforming items. If there are still nonconforming items, the batch of products shall be rejected.

5.5.2 When the results of the appearance inspection do not conform to the provisions of this Standard, the batch of products shall be directly rejected.

6 Marks, packaging, transport, storage and quality certificate

6.1 Marks The outside of each barrel (box, bag) shall indicate.

6.2 Packaging Products are packed in double-layer plastic bags. Put into a plastic woven bag after being sealed by hot pressing or rope tie.

6.3 Transport and storage Strictly prevent rain and moisture absorption during product transportation. Store in a dry place. Stacking in open air is not allowed.