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Light rare earth carbonate

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*(English Translation)*

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Foreword

SAC/TC 229 is in charge of this English translation. In case of any doubt about the contents of the English translation, the Chinese original shall be considered authoritative.

This standard is drafted in accordance with the rules given in the GB/T 1.1-2009.

This standard replaces the GB/T 16479-2008 (*Light Rare Earth Carbonate**)*in whole. In addition to a number of editorial changes, the following technical deviations have been made with respect to GB/T 16479-2008

——Revised the description of the part of the scope (see clause 1);

——Revised normative reference documents (see clause 2);

——Added the product designations (see 3.1);

——Added character designations (see 3.1, 3.2);

——Added content requirements of lanthanum oxide (La2O3) in all product designations (see 3.2);

——Added radioactivity index requirements of product designation(LaCe)X(CO3)y-65Ce,(LaCePr)x(CO3)y-58Ce (see 3.2);

——Added content requirements of praseodymium oxide (Pr6O11),neodymium oxide (Nd2O3), manganese oxide (MnO2), sodium oxide (Na2O) and lead oxide (PbO)in the product designations (LaCe)x(CO3)y-65Ce.(see 3.2);

——Revised some content requirements of product designations(LaCe)x(CO3)y-65Ce, the content of total rare earth (REO) is changed from not less than 44% to not less than 45%, the content of cerium oxide (CeO2) is changed from not less than 62% to 62%～68%, the content of sulfate (SO42-) is changed from not more than 0.05% to not more than 0.03%,the content of chloride (Cl-) is changed from not more than 0.2% to not more than 0.15%, the content of calcium oxide (CaO) is changed from not more than 0.5% to not more than 0.05%, the content of magnesium oxide (MgO) is revised from not more than 0.1% to not more than 0.01% (see 3.2, 3.1 of 2008 edition);

——Added content requirements for neodymium oxide (Nd2O3), sodium oxide (Na2O), lead oxide (PbO) in the product designations(LaCePr)x(CO3)y-58Ce (see 3.2);

Revised some content requirements of product designations(LaCePr)x(CO3)y-58Ce, the content of total rare earth (REO) is changed from not less than 44% to not less than 45%, the content of praseodymium oxide (Pr6O11) is changed from not less than 4% to 4%～7%, the content of other rare earth impurities is changed from the allowance to not more than 0.3%, the content of calcium oxide (CaO) is changed from not more than 0.5% to not more than 0.2%, the content of alumina (Al2O3) is changed from not more than 0.05% to not more than 0.015% (see 3.2, 3.1 of 2008 edition);

——Deleted Magnesium oxide (MgO) content requirements in the product designations (LaCePr)x(CO3)y-58Ce (see 3.1 of 2008 edition);

——Revised the part of the content requirements of the product designations (LaCePrNdEu)x(CO3）y-0.2Eu,the content of cerium oxide (CeO2) is changed from not less than 48% to 48%～52%, the content of praseodymium oxide (Pr6O11)is changed from not less than 5% to 4%～6%,The content of neodymium oxide (Nd2O3) is changed from not less than 15% to 14.2%,the content of europium oxide (Eu2O3) is changed from 0.18% to not more than 0.175%, the content of alumina (Al2O3) is changed from not more than 0.07% to not more than 0.06% (see 3.2, 3.1 of 2008 edition);

——Added content requirements of fluorinion(F-)for the product designations (LaCePrNdEu)x(CO3)y-0.2Eu(see 3.2);

——Deleted the technical specifications of product designations 193244C (see 3.1 of 2008 edition);

——Revised the description of appearance quality (see 3.3, 3.2 of 2008 edition);

——Added the judgment requirements of the results of appearance quality inspection (see 5.2.2).

This standard was proposed and prepared by SAC/TC 229(China Rare Earth Standardization Technical Committee)..

The previous editions of this part are as follows:

-- GB/T 16479-1996.

-- GB/T 16479-2008.

Light rare earth carbonate

1. Scope

This standard specifies the technical requirements, testing methods, inspection rules, marking, packaging, transportation, storage and quality certificate of light rare earth carbonate.

This standard is applicable to light rare earth carbonate prepared by chemical process use bastnaesite-monazite mixed concentrate as raw material, mainly used for separating single rare earth, preparing rare earth polishing materials, catalytic materials, mixed rare earth metals, etc.

1. 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 reference 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 for non-rare earth impurity of rare earth metals and their oxidess*

GB/T 16484 (all parts) *chemical analysis Methods for rare earth chloride and rare earth carbonate*

GB/T 17803 *Designation system for rare earth product*

1. Requirements

3.1 Product designations

Products are designed as (LaCe)x(CO3)y-65Ce、(LaCePr)x(CO3)y-58Ce,(LaCePrNdEu)x(CO3）y-0.2Eu three designations according to chemical composition，the rules for product designations shall comply with the specification of GB/T 17803.

3.2 Chemical composition

The product designation and chemical composition of the product shall comply with the requirements in Table 1.If the buyer has any special requirements, they shall be negotiated by the supplier and buyer.

Table 1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Designation | Characters designation | (LaCe)x(CO3)y-65Ce | (LaCePr)x(CO3)y-58Ce | (LaCePrNdEu)x(CO3)y-0.2Eu |
| Number designation | 193244A | 193244B | 193242 |
| Chemicalcomposition(mass fraction)/% | REO,min | 45 | 45 | 42 |
| Rare earth elements | La2O3 | 32～38 | 29～35 | 24～28 |
| CeO2 | 62～68 | 58，min | 48～52 |
| Pr6O11 | 0.01，max | 4～7 | 4～6 |
| Nd2O3 | 0.03，max | 0.5，max | 14.2，min |
| Eu2O3 | - | - | 0.175，min |
| Other rare earthImpuritya(combined)/REO | Residual content | 0.3，max | Residual content |
| Non-rare earth impurities,max | Fe2O3 | 0.01 | 0.01 | 0.03 |
| SO42– | 0.03 | 0.1 | 1.8 |
| Cl– | 0.15 | 0.2 | - |
| CaO | 0.05 | 0.2 | 0.8 |
| MgO | 0.01 | - | 0.3 |
| Al2O3 | 0.05 | 0.015 | 0.06 |
| ZnO | 0.1 | 0.1 | 0.1 |
| F- | - | - | 0.015 |
| MnO2 | 0.005 | - | - |
| Na2O | 0.1 | 0.1 | - |
| PbO | 0.005 | 0.005 | - |
|  | Acid insoluble,max | 0.2 | 0.2 | 0.2 |
|  | Radioactivity/(Bq/g),max | 0.8 | 0.8 | - |
| aOther rare earth impurities are rare earth elements excluded those listed in the table and Pm 、 Sc. |

3.3 Appearance

3.3.1 The product is in powder form.

3.3.2 The product shall be clean without visible inclusions.

4. Testing methods

4.1 Chemical composition

4.1.1 The determination of the rare earth content, rare earth distribution(La2O3、CeO2、Pr6O11、Nd,2O3、Eu2O3), other rare earth Impurity content, non-rare earth Impurity content (Fe2O3, SO42–, Cl–, CaO, MgO, ZnO, MnO2, Na2O, PbO) and acid insoluble substances shall be carried out in accordance with the rules given in the corresponding part of GB/T 16484.

4.1.2 The determination of fluorine (F-), alumina (Al2O3) shall be carried out in accordance with the rules given in GB/T 12690.

4.1.3 The radioactivity analysis shall be carried out in accordance with supplier's current methods.

4.2 Numerical rounding

The numerical rounding shall be carried out as specified in GB/T 8170.

4.3 Appearance

The appearance of the product shall be inspected visually under natural scattering light.

5 Inspection rules

5.1 Inspection and acceptance

5.1.1 The supplier shall inspect the products to guarantee the quality to comply with the requirements of this standard and provide the quality certificate.

5.1.2 The buyer shall inspect the quality of received products,if the testing results do not conform to this standard, notification of the discrepancies shall be proposed to the supplier within two months from the date of receipt,Both parties should resolve it through negotiation.In case of any arbitration, it could be entrusted to an organization approved by both parties,and samples should be taken by both parties on the buyer side.

5.2 Batching

Products shall be submitted in batches for inspection,and each batch of products shall be in the same designation.

5.3 Inspection items

Chemical composition and appearance quality shall be inspected for each batch of products.

5.4 Sampling and sample preparation

5.4.1 The number of samples shall comply with the requirements in table 2.

Table 2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of packages(bags) | 1～5 | 6～49 | 50～100 | > 100 |
| Number of sampling | 100% of the number of packages(bags) | 5 | 10% of number of packages(bags),Round off numbers | Square root of number of packages(bags),Round off number |

5.4.2 Three points should be taken from the center and surrounding equidistant places of each package(bag) with intubation, and the sampling amount of each package(bag) should not be less than 10g. After the samples are mixed evenly, the samples should be rapidly reduced to the required quantity by quartering method, and then put into clean plastic bottle (bag) and sealed.

5.5 Judgement of inspection results

5.5.1 If the results of the chemical composition arbitration analysis are not in conformity with rules of this standard, double samples shall be taken from the detected batch of products to repeat the test for the unqualified items. If any result remains unqualified,this batch of products shall be judged as unqualified.

5.5.2 If the results of appearance inspections are not in conformity with the results of the standard, the batch of products shall be judged as unqualified.

6 Marking, packaging, transportation, storage and quality certificate

6.1 Marking

The following items shall be indicated for each barrel (box, bag) :

1. Name of the supplier;
2. Name and designation of product;
3. Batch number;
4. Net weight and gross weight;
5. Date of ex-factory and "moisture-proof"signs or notes.

6.2 Packaging

Products shall be packed in double plastic bags, sealed by hot pressing or rope, and then put into plastic woven bags, the net weight of each bag shall be 50kg, 500kg, 1000kg respectively.If the buyer has special requirements for packaging, the supplier and the buyer shall have further negotiation.

6.3 Transportation and storage

The products shall be strictly prevented from rain and moisture during transportation. They shall be stored in a dry place and shall not be stacked in the open air.

6.4 Quality certificate

A quality certificate should be provided for each batch of products,indicating:

1. Name of supplier;
2. Product name and designation;
3. Batch number;
4. Net weight and number of packages;
5. Inspection results and stamp of the supplier quality contorl department;
6. The standard code;
7. Date of ex-factory.