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

**GB/T 16484.6-2009**

Replacing GB/T 16484.6-1996

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**Chemical analysis methods of rare earth chloride and light rare  
earth carbonate - Part 6: Determination of calcium oxide  
content - Flame atomic absorption spectrometry**

氯化稀土、碳酸轻稀土化学分析方法 第6部分：氧化钙量的测定 火焰原子吸收光谱法

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### Foreword

GB/T 16484-2009 "rare earth chloride and light rare earth carbonate chemical analysis method" is divided into 22 parts.

- Part 1. Determination of cerium oxide content of ammonium ferrous sulfate titration;
- Part 2. europium oxide content - Inductively Coupled Plasma Mass Spectrometry;
- Part 3. 15 with a rare earth element oxide component measured by inductively coupled plasma atomic emission spectrometry;
- Part 4. Determination of thorium oxide content arsenazo III spectrophotometry;
- Part 5. Determination of barium oxide by inductively coupled plasma atomic emission spectrometry;
- Part 6. Determination of calcium oxide content by flame atomic absorption spectrometry;
- Part 7. Determination of magnesium oxide content - Flame atomic absorption spectrometry;
- Part 8. Determination of the amount of sodium oxide flame atomic absorption spectrometry;
- Part 9. Determination of the amount of nickel oxide by flame atomic absorption spectrometry;
- Part 10. Determination of manganese oxide content by flame atomic absorption spectrometry;
- Part 11. Determination of lead oxide content by flame atomic absorption spectrometry;
- Part 12. Determination of the amount of sulfate;
- Part 13. Determination of the amount of ammonium chloride distillation - titration;

## 1 Scope

GB/T 16484.6-2009 is the Chinese national standard on chemical analysis methods of rare earth chloride and light rare earth carbonate - part 6: determination of calcium oxide content - flame atomic absorption spectrometry, 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 30 October 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2010. Classification: ICS 77.120.99, CCS H14. 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.

GB/T 16484 provisions of this part of the determination of rare earth chloride, carbonate, calcium oxide content of light rare earth. This section applies to the determination of earth chloride and light rare earth carbonate, calcium oxide content of. Measurement range.

0.10 to 5.00%.

## 2 Principle of the method

The sample was dissolved in nitric acid or hydrochloric acid. In acid medium, with air - acetylene flame, using the standard addition method in the atomic absorption spectrometer wave 422.7nm at long measuring the absorbance of calcium oxide, calcium oxide calculate the amount of sample.

## 3 Reagents and materials

3.1 Hydrogen peroxide (30%). Nitrate 3.2 ( $\rho$ 1.42g/mL).

3.3 HCl (1 + 1).

3.4 calcium oxide standard stock solution. Weigh 1.7848g by 110 °C dried and cooled to room temperature and calcium carbonate in 200mL beaker, add 20mL of hydrochloric acid (3.3) dissolved in boiling divisible carbon dioxide, cooled to room temperature. Moved into 1000mL volumetric flask, dilute to the mark, mix uniform. 1mL solution containing 1mg calcium oxide.

3.5 calcium oxide standard solution. Pipette 10.00mL calcium oxide standard stock solution (3.4) in 200mL volumetric flask, dilute to the mark with water Degree, and mix. This solution 1mL containing 50 $\mu$ g calcium oxide.

## 4 Instrument

Atomic absorption spectrometer, with a calcium hollow cathode lamp. Under optimum working conditions for those who can reach the following indicators can be used.

--- Sensitivity. In the measurement of the sample solution matrix consistent solution, characterized in calcium concentration should not exceed  $0.11\mu\text{g/mL}$ .

--- Precision. standard solution with the highest concentration of 10 times the absorbance measurements, the standard deviation should not exceed the average absorbance of 1.0%; With the lowest concentration of standard solution (not a zero standard solution) measuring the absorbance of 10 times, the standard deviation should not exceed the maximum concentration standard 0.5% average standard solution absorbance.

--- Linear curve. The curve is divided into five sections according to concentration, absorbance difference between the absorbance difference between the highest and the lowest segment of the segment Ratio of not less than 0.7.

## 5 Sample

5.1 Preparation of rare earth chloride sample. A sample was crushed, quickly placed in a weighing bottle immediately weighed.

5.2 Preparation of light rare earth carbonate sample. weigh the sample immediately after the opening. Step

## 6 Analysis

6.1 Sample Table 1 sample was weighed, accurate to  $0.0001\text{g}$ .