

ICS 77.120.99

CCS H14



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

GB/T 16484.4-2009

Replacing GB/T 16484.4-1996

**Chemical analysis methods of rare earth chloride and light rare
earth carbonate - Part 4: Determination of thorium oxide
content - ArsenazoIII spectrophotometry**

氯化稀土、碳酸轻稀土化学分析方法 第4部分：氧化钍量的测定 偶氮胂III分光光度法

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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 16484.4-2009 is the Chinese national standard on chemical analysis methods of rare earth chloride and light rare earth carbonate - part 4: determination of thorium oxide content - arsenazo III spectrophotometry, 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.

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GB/T 16484 provisions of this part of the determination of earth chloride and light rare earth carbonate in the amount of thorium oxide. This section applies to rare earth, light rare earth carbonate - Determination of the amount of thorium oxide chlorination. Measurement range. 0.0001% to 0.30%. Principle

2 The sample was dissolved in nitric acid or hydrochloric acid, at pH < 2 in hydrochloric acid medium with PMBP- butyl acetate solution was extracted thorium to separate rare earths. use 6mol/L hydrochloric acid, and extracted thorium, measured at 650nm wavelength spectrophotometer and thorium arsenazo III complex absorbance.

3 Reagents

3.1 hydrochloride (rho1.19g/mL). Nitrate 3.2 (rho1.42g/mL).

3.3 perchloric acid (rho1.67g/mL).

3.4 Hydrogen peroxide (30%).

3.5 HCl (1 + 1).

3.6 hydrochloric acid (1 + 49). Ammonia 3.7 (1 + 9).

3.8 Phenyl-3-methyl-4-benzoyl - pyrazolone -5 (PMBP) - butyl acetate solution (10g/L). Weigh 5gPMBP, plus 500mL Butyl acetate dissolved.

3.9 acid buffer solution. Weigh 87g chloroacetic acid, add 1L of water was dissolved, the pH was adjusted to

2.0 with hydrochloric acid (3.5) and ammonia (3.7).

3.10 thoria standard stock solution. Weigh 0.1000g by 110 °C dried and placed in a desiccator to cool to room temperature in thorium dioxide 100mL beaker, add 10mL of hydrochloric acid (3.5), 1 drop of hydrofluoric acid (1 + 19), low-temperature heating until completely dissolved and evaporated to about 1mL, Plus 5mL hydrochloric acid (3.5), and

evaporation was continued until about 1mL, repeat the operation once to rush to make a fluoride ion. Cooling to room temperature, transferred to 1000mL Flask dilute to volume, and mix. This solution 1mL containing 100 μ g of thorium oxide.

3.11 thorium oxide standard solution. Pipette 5.00mL thorium standard stock solution (3.10) in 200mL volumetric flask (3.6) with dilute hydrochloric acid To the mark, and mix. This solution 1mL containing 2.5 μ g thorium oxide.

3.12 arsenazo III solution (1g/L).

3.13 cresol red solution (1g/L).

4 Equipment

Spectrophotometer.

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.