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

GB/T 16484.21-2009

**Chemical analysis methods of rare earth chloride and light rare
earth carbonate - Part 21: Determination of iron oxide content -
1,10-phenanthroline spectrophotometry**

氯化稀土、碳酸轻稀土化学分析方法 第21部分：氧化铁量的测定 1, 10-二氮杂
菲分光光度法

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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 16484.21-2009 is the Chinese national standard on chemical analysis methods of rare earth chloride and light rare earth carbonate - part 21: determination of iron oxide content - 1,10-phenanthroline 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. 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 earth chloride and light rare earth carbonate, iron oxide content. This section applies to the determination of earth chloride and light rare earth carbonate, iron oxide content. Measurement range. 0.0030% to 1.00%.

2 Principle of the method

The sample is dissolved in dilute hydrochloric acid with hydroxylamine hydrochloride to restore bivalent ferric iron under conditions of acidity of pH4 ~ pH6, divalent iron ions And phenanthroline color, measured at 510nm wavelength spectrophotometer absorbance.

3 Reagents and materials

3.1 hydrochloric acid ($\rho=1.19\text{g/mL}$), pure class distinctions.

3.2 Hydrogen peroxide (30%). Hydrochloride 3.3 (1 + 5).

3.4 hydroxylamine hydrochloride (100g/L). 3.5 1,10-phenanthroline solution (10g/L). Weigh 1g 1,10-phenanthroline was dissolved in absolute ethanol, diluted with water to 100mL, Mix well.

3.6 citric acid solution. (300g/L).

3.7 with saturated sodium acetate solution.

3.8 iron standard stock solution. Weigh 0.1000g iron [$w(\text{Fe}) > 99.9\%$] in 150mL beaker, add 30mL of hydrochloric acid (3.3) Low Was heated until complete dissolution temperature, cooled to room temperature. Moved into 1000mL volumetric flask and dilute to volume, and mix. This solution containing 1mL 0.1mg iron.

3.9 iron standard solution. Pipette iron standard stock solution (3.8) 10mL to 100mL volumetric flask, dilute with water to volume, and mix. this 1mL solution containing 10 μg

iron.

4 Instrument

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. Step

6 Analysis

6.1 Sample Table 1 sample was weighed, accurate to 0.0001g.