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YS

**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 254.6-2011

Replacing YS/T 254.6-1994

**Methods for chemical analysis of beryllium concentrate and
beryl. Part 6: Determination of calcium oxide content. Flame
atomic absorption spectrometry**

铍精矿、绿柱石化学分析方法 第6部分：氧化钙量的测定火焰原子吸收光谱法
(English Translation)

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Foreword

YS/T 254 "of beryllium ore, beryl chemical analysis method" is divided into seven parts.

- Part 1. Determination of the amount of beryllium oxide phosphate gravimetric method;
- Part 2. iron oxide contents - EDTA titration sulfosalicylic acid spectrophotometric method;
- Part 3. Determination of phosphorus content Molybdovanadophosphoric acid spectrophotometry;
- Part 4. Determination of the amount of lithium oxide flame atomic absorption spectrometry;
- Part 5. Determination of the amount of fluorine ion selective electrode method;
- Part 6. Determination of calcium oxide content by flame atomic absorption spectrometry;
- Part 7. moisture content - Gravimetric method.

This section YS/T Part 6 254.

The partial replacement of YS/T 254.6-1994 "beryllium concentrates - beryl chemical analysis by flame atomic absorption spectrometry determination of calcium oxide Amount "(formerly GB/T 5870.6-1986).

Section compared with YS/T 254.6-1994 The main changes are as follows.

- The "lanthanum - strontium mixed solution" to "lanthanum solution";
- Increased repeatability terms;
- Text format has been re-edited, an increase of quality assurance and control provisions.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

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1 Scope

This section YS/T 254 provisions of the beryllium ore, beryl Determination of calcium oxide content.

This section applies to beryllium ore, beryl determination of calcium oxide. Measurement range of 0.05% to 2.00%.

2 Method summary

Sample with ammonium hydrogen - hydrofluoric acid decomposition, heightening smoke fluorine perchlorate in hydrochloric acid medium, lanthanum release agents, in AAS Spectrum at a wavelength of 422.7nm, air - acetylene flame measured calcium oxide.

3 Reagents

3.1

ammonium hydrogen fluoride.

3.2

perchloric acid ($\rho=1.67\text{g/mL}$).

3.3

Hydrofluoric acid ($\rho=1.13\text{g/mL}$).

3.4

hydrochloric acid solution (11) pure class distinctions.

3.5

lanthanum solution. Weigh 29.3g of lanthanum oxide (of La_2O_3) (high purity grade), placed in 250mL beaker, a solution of hydrochloric acid was added slowly with stirring (3.4) to dissolve lanthanum oxide, heated to boiling clear, cooled to room temperature, the solution is transferred 500mL volumetric flask, dilute to the mark with water, Mix well.

Calcium oxide 3.6 standard stock solution. Weigh 1.7850g ignition advance 1.5h at $300\text{ }^\circ\text{C}$ ~ $400\text{ }^\circ\text{C}$ and placed in a desiccator and cooled to Calcium carbonate at room temperature [$w(\text{CaCO}_3) \geq 99.9\%$], placed in 250mL beaker. Was added 100mL of water, cover the dish table, from the cup mouth slowly add Into 30mL hydrochloric acid solution (3.4), heated to dissolve all of the calcium carbonate, the carbon dioxide purge boil, cooled to room temperature, washed with water purge sheet pan, shift Into 1000mL volumetric flask, dilute with water to volume, and mix. This solution corresponds to $1000\mu\text{g}$ 1mL calcium oxide.

3.7

calcium oxide standard solution. Pipette 100.00mL calcium oxide standard stock solution (3.6), placed 1000mL volumetric flask, dilute with water Diluted to volume, and mix. This solution was equivalent to 100 μ g 1mL calcium oxide.

4 Instrument

Atomic absorption spectrometer, with a calcium hollow cathode lamp.

Under optimum conditions the instrument, those who can achieve the following indicators can be used.

--- Characteristic concentration. In line with the determination of the solution matrix solution, characterized in calcium concentration should not exceed 0.10 μ g/mL.

--- Precision. standard solution with the highest concentration of 10 times the absorbance measurements, the standard deviation should not exceed 1.5% of the average absorbance;

With the lowest concentration of standard solution (not "zero" concentration of the standard) measuring the absorbance of 10 times, the standard deviation should not exceed the maximum the average concentration of 0.5% 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