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YS

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

YS/T 568.3-2008

Replacing YS/T 568.3-2006

**Chemical analysis methods for zirconium oxide and hafnium
oxide. Determination of silicon content. Spectrophotometric
method with the reduced silicomolybdic complex**

氧化锆、氧化铪化学分析方法 硅量的测定 钼蓝分光光度法

(English Translation)

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Foreword

YS/T 568 "zirconium, hafnium oxide chemical analysis method" is divided into 11 parts.

- Part 1. Determination of zirconium oxide and hafnium content of mandelic acid gravimetric method;
- Part 2. Determination of iron content sulfonic acid spectrophotometry;
- Part 3. Determination of silicon content - Molybdenum blue spectrophotometric method;
- Part 4. Determination of aluminum content of chromium azure S- cypyrindinium chloride spectrophotometry;
- Part 5. Determination of sodium content by flame atomic absorption spectrometry;
- Part 6. Determination of the amount of titanium di Zhao DAM spectrophotometry;
- Division 7. Determination of phosphorus content of antimony salt - ascorbic acid - phosphorus molybdenum blue spectrophotometric method;
- Division 8. zirconia aluminum, calcium, magnesium, manganese, sodium, nickel, iron, titanium, zinc, molybdenum, vanadium, hafnium content - Inductively coupled plasma fat Emission spectrometry;
- Part 9. hafnium oxide of aluminum, calcium, magnesium, manganese, sodium, nickel, iron, titanium, zinc, molybdenum, vanadium, zirconium content - Inductively coupled plasma fat Emission spectrometry;
- Part 10. Determination of manganese content - Potassium periodate spectrophotometric method;
- Part 11. Determination of alpha- linked furoylhydrazone nickel dioxime spectrophotometric method.

This is Part 3.

The partial replacement of YS/T 568.3-2006 "zirconium oxide, hafnium silicon content determination" (formerly GB/T 2590.3-1981).

This portion of YS/T 568.3-2006 compared to the main changes are as follows.

--- Added "7.1 repeatability" clause.

--- Added "8 Quality assurance and control" clause.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

This part by the Beijing Nonferrous Metal Research Institute, China Nonferrous Metals Industry Institute of Standards Metrology and Quality is responsible for drafting.

1 Scope

This section specifies the determination method zirconia and hafnium silicon content.

This section applies to the determination of zirconium oxide and hafnium oxide and silicon content. Measurement range. 0.005% to 0.7%.

2 Method summary

Hydrofluoric acid in a high pressure sample Sample Dissolution apparatus dissolved, boric acid, ammonium molybdate after the solution was adjusted to pH 1 to 1.5, silicon to form a silicon Molybdenum yellow, adding citric acid to eliminate phosphorus, arsenic interference with a 1-2-4 silicon molybdenum yellow acid is reduced to silicon molybdenum blue at 700nm wavelength spectrophotometer at Measuring the absorbance.

3 Reagents

3.1

boric acid, pure class distinctions.

3.2

hydrofluoric acid ($\rho=1.15\text{g/mL}$), pure class distinctions.

3.3

Ammonia ($\rho=0.90\text{g/mL}$), pure class distinctions.

3.4

sulfate ($\rho=1.84\text{g/mL}$), pure class distinctions.

3.5

ammonium molybdate solution (100g/L), pure class distinctions.

3.6

citric acid solution (200g/L), pure class distinctions.

3.7

amino-2-naphthol-4-sulfonic acid solution (1-2-4 acid). Weigh 0.05g 1-2-4 acid, dissolved in 100mL 100g/L sodium sulfite solution the time is now equipped with.

3.8

silicon standard stock solution.

Weigh 2.1393g pure silica [(Si) > 99.9%], placed in a platinum crucible, sodium carbonate and potassium carbonate was added 10g of melt mixing Agent (2 + 1), mix well, on the torch to melt the crucible contents completely melted, continue to melt 10min. Cooling, leaching with hot water, heated to dissolve Liquid clarification. Cooling water moved into 1000mL volumetric flask, and dilute to the mark. Store in a polyethylene bottle. This solution 1mL Silicon-containing 1mg.

3.9

Silicon standard solution. Pipette 25.00mL silicon standard stock solution (3.8), placed in 250mL volumetric flask, dilute to the mark, shake uniform. Store in a polyethylene bottle. This solution 1mL containing 100μg silicon.

4 Instrument

Spectrophotometer;

High pressure sample dissolution apparatus.

5.1 Sample

Table 1 sample was weighed, accurate to 0.0001g.