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YS

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

YS/T 568.10-2008

Replacing YS/T 568.10-2006

**Chemical analysis methods for zirconium oxide and hafnium
oxide. Determination of manganese content. Potassium
periodate spectrophotometric method**

氧化锆、氧化铪化学分析方法 锰含量的测定 高碘酸钾分光光度法

(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 and hafnium oxide combined amount of mandelic acid gravimetric method;

--- Part 2. Determination of iron content sulfonic acid spectrophotometry;

--- Part 3. Determination of the amount of silicon 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;

--- Part 7. Determination of phosphorus content of antimony salt - ascorbic acid - phosphorus molybdenum blue spectrophotometric method;

--- Part 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 section 10.

The partial replacement of YS/T 568.10-2006 "zirconium oxide, hafnium and manganese contents" (formerly GB/T 2590.10-1981).

This portion of YS/T 568.10-2006 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 of zirconia and hafnium oxide manganese content.

This section applies to the determination of zirconium oxide and hafnium oxide and manganese content. Measurement range. 0.003% to 0.03%.

2 Method summary

Sample with sulfuric acid, ammonium sulfate dissolved, potassium periodate oxidation of the low-cost manganese permanganate, in the spectrophotometer at a wavelength of 530nm, measured for Absorbance.

3 Reagents

3.1

ammonium sulfate.

3.2

potassium periodate.

3.3

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

3.4

nitrate ($\rho=1.42\text{g/mL}$), pure class distinctions.

3.5 Sodium nitrite solution (100g/L)

3.6 manganese standard stock solution.

Weigh 1.0000g of manganese metal ($> 99.9\%$) (pre-weighing surface oxide washed with dilute sulfuric acid, then washed with water to acid after drying) plus Into 20mL sulfuric acid (1 + 4), dissolved by heating, water and transferred to 1000mL volumetric flask, and dilute to the mark. This solution 1mL Containing 1mg manganese.

3.7 Manganese standard solution. Pipette 25.00mL manganese standard stock solution, placed in 250mL flask, diluted with water to the mark. this 1mL solution containing $100\mu\text{g}$ manganese.

4 Instrument

Spectrophotometer.

5.1 Sample

Weigh 0.50g to 1.0g sample, accurate to 0.0001g.

5.2 Determination of the number of Independent of the two measurements, the mean value.

5.3 Blank test

Along with sample blank test.

5.4 Determination

5.4.1

The sample was placed in 150mL dry cup, add 10mL sulfuric acid (3.3) and 5g of ammonium sulfate (3.1), cover the dish table, in an electric furnace on the sample was heated to complete dissolution. Cooling water purge table dish and cup wall.

5.4.2

added 1.5mL nitric acid (3.4), dilute with water to 50mL, mix heated to near boiling, remove, add 0.3g potassium periodate (3.2), heated to boiling 12min. Cooling water transferred to 50mL volumetric flask, and dilute to volume, shake, if cloudy, then take part of the solution