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YS

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

YS/T 568.7-2008

Replacing YS/T 568.7-2006

**Chemical analysis methods for zirconium oxide and hafnium oxide.
Determination of phosphorus content. The reduced
molybdoantimonylphosphate complex spectrophotometric method**

氧化锆、氧化铪化学分析方法 磷含量的测定 钨盐-抗坏血酸-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 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 atomic Emission spectrometry;

--- Part 9. hafnium oxide of aluminum, calcium, magnesium, manganese, sodium, nickel, iron, titanium, zinc, molybdenum, vanadium, zirconium content - Inductively coupled plasma atomic 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 7.

The partial replacement of YS/T 568.7-2006 "zirconium oxide, hafnium determination of phosphorus content" (formerly GB/T 2590.7-1981).

This portion of YS/T 568.7-2006 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 hafnia phosphorus content.

This section applies to the determination of zirconium oxide, hafnium oxide and phosphorus content. Measurement range. 0.005% to 0.8%.

2 Method summary

Hydrofluoric acid in a high pressure sample Sample Dissolution apparatus was dissolved, was added boric acid in 0.2mol/L sulfuric acid solution, ammonium molybdate phosphorus, antimony Salt, ascorbic molybdenum blue at 700nm wavelength spectrophotometer measured absorbance.

Zirconium matrix slightly lower so that the results in order to eliminate the impact shall be equal amounts of zirconium as a substrate to prepare a working curve. Hafnium matrix without interference.

In fluoroborate and sodium thiosulfate under a blanket, a test solution containing respectively 1mg of aluminum, tin, vanadium, uranium, 2mg titanium, thorium, arsenic, germanium, chromium, 4mg 17mg of silicon and iron, do not interfere with the determination.

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 water (1 + 1), pure class distinctions.

3.4

Mixed masking agent. 8g/L sodium thiosulfate solution and 80g/L sodium bisulfite solution was mixed in equal volumes.

3.5

mixed stain.

(A) sulfuric acid (2.7mol/L), pure class distinctions.

(B) ascorbic acid solution (30g/L), the time is now equipped with.

(C) ammonium molybdate solution (50g/L).

(D) antimony potassium tartrate solution. Weigh 0.2743g antimony potassium tartrate $[\text{KSbOC}_4\text{H}_4\text{O}_6]$ dissolved in water and diluted to 100mL, mix uniform. This solution 1mL 1mg containing antimony.

Take 50mL (A) solution, 20mL (B) solution, 15mL (C) dilute solution, (D) a mixed solution 6mL, mixed with water to 100mL (When used with now).

3.6

Phosphorus standard stock solution. Weigh 0.4264g diammonium phosphate $[(\text{NH}_4)_2\text{HPO}_4]$ was dissolved in water, the water moved 1000mL capacity Flask, and dilute to volume, shake. This solution 1mL containing 100 μg phosphorus.

3.7

Phosphorus standard solution. Pipette 25.00mL phosphorus standard stock solution (3.6), placed in 250mL volumetric flask, dilute to the mark with water, shake uniform. This solution 1mL containing 10 μg phosphorus.

4 Instrument

Spectrophotometers and high pressure sample dissolution apparatus.

5.1 Sample

Weigh 0.10g or 0.20g sample, accurate to 0.0001g.