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

YS/T 710.5-2009

Replacing YS/T 256-2000

**Method for chemical analysis of cobalt oxide. Part 5:
Determination of silicon content. Molybdenum blue
spectrophotometry**

氧化钴化学分析方法 第5部分：硅量的测定 钼蓝分光光度法

(English Translation)

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Foreword

YS/T 710 "cobalt oxide chemical analysis method" is divided into six sections.

- Part 1. Determination of cobalt content potentiometric titration;
- Part 2. Determination of sodium content by flame atomic absorption spectrometry;
- Part 3. Determination of the amount of sulfur by high frequency combustion infrared absorption method;
- Part 4. Determination of arsenic content by atomic fluorescence spectrometry;
- Part 5. Determination of silicon content - Molybdenum blue spectrophotometric method;
- Part 6. calcium, cadmium, copper, iron, magnesium, manganese, nickel, lead and zinc content - Inductively coupled plasma atomic emission spectrometry.

This section YS/T Part 5 710.

The partial replacement of YS/T 256-2000 "cobalt oxide" Appendix F. Compared with YS/T 256-2000 "cobalt oxide" Appendix F, Part the main changes are as follows.

- Molybdenum blue spectrophotometric method instead of the emission spectrometry;
- Complements the precision and quality assurance and control provisions.

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

This section is responsible for drafting unit. Zhuzhou Smelter Group Co., Ltd.

Participated in the drafting of this section. Jinchuan Group Ltd., Ganzhou cobalt tungsten limited liability company.

1 Scope

YS/T of the provisions of section 710 of the method for the determination of the amount of cobalt oxide silicon.

This section applies to the determination of the amount of silicon oxide cobalt.

Measurement range. 0.0010% to 0.050%.

2 Method summary

Sample with perchloric acid dissolved and evaporated to near dryness, wherein the insoluble silica, hydrofluoric acid is added to dissolve. At pH1.5, the silicon and ammonium molybdate the molybdenum yellow heteropoly acid in sulfuric acid medium with butanol, the organic phase with sulfuric acid diamide and stannous reduced to molybdenum blue, for spectrophotometric Total 630nm wavelength measured absorbance.

3 Reagents

Solution preparation and analysis of water are ultra pure water. After reagent preparation were stored in plastic bottles.

3.1 Commercially available reagents

3.1.1

hydrofluoric acid, pure class distinctions.

3.1.2

butanol.

3.2 Solution

3.2.1

perchloric acid (1 + 1), pure class distinctions.

3.2.2

sulfuric acid (1 + 3), ultrapure.

3.2.3

sulfuric acid (7 + 93), ultra-pure.

3.2.4

a saturated solution of boric acid, high purity.

3.2.5

ammonium molybdate solution (100g/L). Weigh 10g of ammonium molybdate (excellent pure) was dissolved in 80mL water, cooled, diluted with water to 100mL, mix and filter use.

3.2.6

citric acid solution (500g/L), pure class distinctions.

3.2.7

Hydrazine sulfate solution (2.5g/L). excellent pure, formulated with high purity sulfuric acid (1.5 + 98.5).

3.2.8

stannous chloride (100g/L). Weigh 10g of stannous chloride dissolved in high purity hydrochloric acid (1 + 1) and diluted to 100mL, mix, effective Five days.

3.2.9

ammonia, high purity.

3.3 Standard solution

3.3.1

silicon standard stock solution. Weigh 0.2142g silica ($\text{SiO}_2 \geq 99.9\%$) in a platinum crucible, 5g of anhydrous sodium carbonate (Excellent pure), mix, cover, placed in a muffle furnace 400 °C, the temperature was raised to 900 °C, melting 1h, washed with water and remove the outer wall of the crucible, placed in polytetrafluoroethylene Fluoride beaker, add 100mL cold water to dissolve, cooled to room temperature. Moved into 1000mL volumetric flask, dilute to the mark, mix, Immediately transferred to dry plastic bottles. This solution 1mL containing 100 μg silicon.

3.3.2

Silicon standard solution. Pipette 50.00mL silicon standard stock solution (3.3.1) in 1000mL volumetric flask, dilute to the mark, Mix dried immediately transferred to a plastic bottle. This solution 1mL containing 5 μg silicon.

4 Instrument

Spectrophotometer.