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

YS/T 710.4-2009

Replacing YS/T 256-2000

**Method for chemical analysis of cobalt oxide. Part 4:
Determination of arsenic content. Atomic fluorescence
spectrometry**

氧化钴化学分析方法 第4部分：砷量的测定 原子荧光光谱法
(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 4 710.

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

- Atomic fluorescence spectrometry alternative DDTC-Ag spectrophotometry.
- 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. Beijing Mining Research Institute, Guangzhou Nonferrous Metal Research Institute.

1 Scope

YS/T of the provisions of section 710 of the method for the determination of arsenic content in the cobalt oxide.

This section applies to the determination of arsenic content of cobalt oxide. Measurement range. 0.0010% to 0.020%.

2 Method summary

Sample was dissolved in aqua regia, hydrochloric acid solution, thiourea - ascorbic acid pre-reduction in the hydride generator, arsenic is potassium borohydride Reduction of hydride with argon introduced into a quartz furnace atomizer, the fluorescence intensity was measured arsenic in the atomic fluorescence spectrometer.

3.1 Commercially available reagents

3.1.1

hydrochloric acid ($\rho=1.19\text{g/mL}$), pure class distinctions.

3.1.2

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

3.2 Solution

3.2.1

sodium hydroxide solution (50g/L).

3.2.2

hydrochloric acid (1 + 1).

3.2.3

thiourea - ascorbic acid solution (50g/L + 50g/L, the time is now equipped with). Weigh thiourea, ascorbic acid each 25g in 300mL beaker the volume to be dissolved in 500mL flask.

3.2.4

hydrochloric acid (1 + 9).

3.2.5

solution of potassium borohydride (15g/L). When called to take 15g potassium borohydride, potassium hydroxide dissolved in 1000mL (100g/L) solution, with Now equipped.

3.3 Standard solution

3.3.1

arsenic standard stock solution. Weigh 0.1321g trioxide reference reagent (previously at 100 °C ~ 105 °C baking 1h, and placed in dry Dryer cooled to room temperature) in the 300mL beaker, add 20mL of sodium hydroxide solution (3.2.1), low heat to dissolve completely neutralized with hydrochloric acid to slightly acidic, cooled and transferred to 1000mL volumetric flask and dilute to volume, and mix. This solution 1mL containing 0.1mg arsenic.

3.3.2

arsenic standard solution. Pipette 5.00mL arsenic standard stock solution (3.3.1), placed in 500mL volumetric flask, was added 50mL of hydrochloric acid (3.1.1), dilute with water to volume, and mix. This solution 1mL containing 1μg of arsenic.

4 Instrument

Atomic fluorescence spectrometer, with a high-intensity arsenic hollow cathode lamp.

Under optimum working conditions for those who can reach the following indicators can be used.

--- Detection limit. not more than 1×10^{-9} g/mL;

--- Precision. measuring the fluorescence intensity with 0.1μg/mL of arsenic standard solution 10 times the standard deviation should not exceed the average fluorescence intensity 5.0%.

Table 1 Reference instrument operating conditions.