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

YS/T 281.15-2011

**Methods for chemical analysis of cobalt. Part 15: Determination
of arsenic, antimony and bismuth content. Hydride
generation-atomic fluorescence spectrometry**

钴化学分析方法 第15部分：砷、锑、铋量的测定氢化物发生-原子荧光光谱法

(English Translation)

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Foreword

YS/T 281 "cobalt chemical analysis method" is divided into the following 20 parts.

Part 1. Determination of iron content - Sulfosalicylic acid spectrophotometric method Part 2. Determination of aluminum content - Chromazu S spectrophotometric method Part 3. Determination of silicon content - Molybdenum blue spectrophotometric method Part 4. Determination of arsenic content - Molybdenum blue spectrophotometric method - Part 5. Determination of phosphorus content - Molybdenum blue spectrophotometric method Part 6. Determination of magnesium content - Flame atomic absorption spectrometric method - Part 7. Determination of zinc content - Flame atomic absorption spectrometric method Part 8. Determination of cadmium content - Flame atomic absorption spectrometric method Part 9. Determination of lead content - Flame atomic absorption spectrometric method Part 10. Determination of nickel content - Flame atomic absorption spectrometric method - Part 11. Determination of copper and manganese - Flame atomic absorption spectrometric method - Part 12. Determination of arsenic, antimony, bismuth, tin and lead - Electrothermal atomic absorption spectrometry - Part 13. Determination of sulfur content - High frequency induction furnace combustion infrared absorption method - Part 14. Determination of carbon content - High frequency induction furnace combustion infrared absorption method - Part 15. Determination of arsenic, antimony and bismuth - Hydride generation - atomic fluorescence spectrometry - Part 16. Determination of the amount of arsenic, cadmium, copper, zinc, lead, bismuth, tin, antimony, silicon, manganese, iron, nickel, aluminum and magnesium.

Spectrum method

- Part 17. Determination of aluminum, manganese, nickel, copper, zinc, cadmium, tin, antimony, lead and bismuth inductively coupled plasma mass spectrometry - Part 18. Determination of sodium content - Flame atomic absorption spectrometric method - Part 19. Determination of calcium, magnesium, manganese, iron, cadmium and zinc - Inductively coupled plasma emission spectrometric method - Part 20. Determination of the amount of oxygen - Infrared absorption method this section is part 15 of YS/T 281.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part of the National Nonferrous Metals Standardization Technical Committee (SAC/TC243) proposed and centralized.

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Cobalt chemical analysis method Part 15. determination of arsenic, antimony and bismuth content Hydride generation - atomic fluorescence spectrometry WARNING. Personnel using this standard should have experience working in a regular laboratory. This standard does not indicate all possible security issues. Make it is the responsibility of the user to take appropriate safety and health measures and to ensure compliance with the conditions set forth in the relevant national regulations.

1 Scope

This part of YS/T 281 specifies the determination of arsenic, antimony and bismuth in cobalt.

This part is applicable to the determination of arsenic, antimony and bismuth in cobalt. Measurement range. 0.00010% ~ 0.0030%.

2 Principle of the method

Samples with nitric acid decomposition, with manganese dioxide coprecipitation enrichment of arsenic, antimony, bismuth, precipitation with sulfuric acid dissolved. In the hydride generator, arsenic, antimony, the bismuth is reduced to a hydride by potassium borohydride, introduced into the quartz furnace atomizer with argon, and the fluorescence of arsenic, antimony and bismuth is measured on an atomic fluorescence spectrometer strength.

3 Reagent

If there is no special instructions, the reagents used are excellent grade pure reagents, preparation and analysis of water are secondary distilled water or a considerable purity of the experiment Room water.

3.1

Potassium borohydride.

3.2

Potassium hydroxide.

3.3

Thiourea.

3.4

ascorbic acid.

3.5

manganese sulfate.

3.6

potassium permanganate.

3.7

Hydrochloric acid ($\rho = 1.19 \text{ g/mL}$).

3.8

nitric acid ($\rho = 1.42 \text{ g/mL}$).

3.9

sulfuric acid ($\rho = 1.84 \text{ g/mL}$).

3.10

hydrochloric acid (1:4).

3.11

nitric acid (1:1).

3.12

Hydrogen peroxide (30%).

3.13

Potassium hydroxide solution (5 g/L). Weigh 1 g of potassium hydroxide (3.2) in 200 mL of water.

3.14

Potassium borohydride solution (20 g/L). Weigh 4 g potassium borohydride (3.1) in 200 mL potassium hydroxide solution (3.13). Is used Now with 3.15 thiourea - ascorbic acid mixed solution. Weigh 10.0 g thiourea, add about 80 mL of water to dissolve, after cooling, add 10.0 g anti-bad Blood acid, dissolved and diluted to 100 mL, mix. Is now available.

3.16

manganese sulfate solution (100g/L).