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

YS/T 281.16-2011

Methods for chemical analysis of cobalt. Part 16: Determination of arsenic, cadmium, copper, zinc, lead, bismuth, tin, antimony, silicon, manganese iron, nickel, aluminum, and magnesium content. Direct current arc atomic emission spectrometry

钴化学分析方法 第16部分：分砷、镉、铜、锌、铅、铋、锡、锑、硅、锰、铁、镍、铝、镁量的测定直流电弧原子发射光谱法

(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 16 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.

This standard is responsible for drafting units. Jinchuan Group Co., Ltd., Beijing Mining and Metallurgy Research Institute.

This part is responsible for drafting unit. Jinchuan Group Co., Ltd.

This part participates in the drafting unit. Beijing Institute of Mining and Metallurgy, Beijing Nonferrous Metals Research Institute.

1 Scope

This part of YS/T 281 specifies the content of impurity elements such as arsenic, cadmium, copper, zinc, lead, bismuth, tin, antimony, silicon, manganese, iron, nickel, aluminum and magnesium in cobalt of the method of determination.

In this part, the determination range of the impurity element content in cobalt is defined as follows. For the measurement work curve satisfying the requirements of this standard, the lower limit of analysis of impurity elements is 80% of the minimum content of the standard sample used, and the upper limit of the analytical standard is the highest content of the standard sample used 120%; for the local part of the work curve to meet the requirements, select the work curve to meet the requirements of this part of the determination of the impurity elements of the analysis range.

This section specifies the objective criteria for evaluating the analytical value of an arc-type emission spectrometer. Due to the wide range of existing spectrometer equipment Pan, it is difficult to specify all the conditions of the spectrum equipment, so this part does not have to specify the model of the instrument or the conversion of the instrument for the concentration unit of the program.

2 Principle of the method

The sample was dissolved in nitric acid, evaporated to dryness, calcined to an oxide, and ground into a powder. Various samples were used, and the emission spectrometer the arc is excited to carry out the sample analysis and calculate the impurity element content.

3 Reagents and materials

If no special instructions, the reagents used for the analysis of pure reagents, preparation and analysis of water are secondary distilled water or considerable purity of the experiment Room water.

3.1

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

3.2

nitric acid (3 2).

3.3

nitric acid (19).

3.4

graphite electrode (spectral purity).

3.5

cobalt spectrum standard sample. must be approved by the relevant authority of the standard sample or supply and demand agreed to determine the standard sample. kind See Appendix A for the impurity content.

3.6

agate mortar.

4 Instruments and equipment

4.1

Spectrometer. As long as with the arc excitation device, with effective instrument accuracy, you can use any detector with the emission spectrometer.