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

YS/T 281.1-2011

Replacing YS/T 281.1-1994

**Methods for chemical analysis of cobalt. Part 1: Determination
of iron content. Sulfosalicylic acid spectrophotometry**

钴化学分析方法 第1部分：铁量的测定磺基水杨酸分光光度法

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents
4 Instrument

Foreword

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

- Part 1. Determination of iron content sulfonic acid spectrophotometry
- Part 2. Determination of the amount of chrome aluminum Azure S Spectrophotometry
- 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 spectrometry
- Part 7. Determination of zinc content - Flame atomic absorption spectrometry
- Part 8. Determination of cadmium content by flame atomic absorption spectrometry
- Part 9. Determination of lead content - flame atomic absorption spectrometry
- Part 10. Determination of nickel content by flame atomic absorption spectrometry
- Part 11. Flame atomic copper, manganese content absorption spectrometry
- Part 12. arsenic, antimony, bismuth, tin, lead and determining the amount of electrothermal atomic absorption spectrometry
- Part 13. Determination of sulfur content high frequency induction furnace combustion infrared absorption method
- Part 14. Determination of the amount of carbon high-frequency induction furnace combustion infrared absorption method
- Part 15. arsenic, antimony, bismuth contents - Hydride Generation - Atomic Fluorescence Spectrometry

--- Part 16. Determination of DC arc atomic arsenic, cadmium, copper, zinc, lead, bismuth, tin, antimony, silicon, manganese, iron, nickel, aluminum, magnesium content of the emitted light Spectroscopy

--- Part 17. aluminum, manganese, nickel, copper, zinc, cadmium, tin, antimony, lead, bismuth content - Inductively Coupled Plasma Mass Spectrometry

--- Part 18. Determination of sodium content by flame atomic absorption spectrometry

--- Part 19. calcium, magnesium, manganese, iron, cadmium, zinc content - Inductively coupled plasma atomic emission spectrometry

--- Part 20. Determination of oxygen content - Impulse - infrared absorption method this section YS/T 281 - Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

The partial replacement of YS/T 281.1-1994 "Methods for chemical analysis of cobalt sulfosalicylic acid spectrophotometric determination of iron content." versus YS/T 281.1-1994 compared, this section there are major changes as follows.

--- Text format has been modified;

--- Supplementary terms of quality assurance and control, increasing the repeatability limit and reproducibility limit;

--- Complement the test reporting requirements.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) and focal points.

1 Scope

This section YS/T 281 specifies the method for determination of cobalt in iron content.

This section applies to the determination of iron content in cobalt. Measurement range. 0.00080% to 0.70%.

2 Method summary

Sample dissolved in nitric acid, hydrochloric acid solution at about 7mol L /, 4-methyl-2-pentanone and isoamyl acetate mixed solvent extraction of iron Cobalt separation, then back extracted with water, ammonia solution at pH8.5 ~ 11, the iron (III) with sulfosalicylic acid to form a stable yellow complex 420nm wavelength spectrophotometer measured absorbance.

3 Reagents

Unless otherwise specified, the reagents were analytical reagent solution preparation and analysis are secondary distilled water or equivalent purity test Room with water.

3.1

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

3.2

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

3.3

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

3.4

ammonium hydroxide ($\rho = 0.90\text{g/mL}$).

3.5 4-methyl-2-pentanone.

3.6

isoamyl acetate.

3.7

hydrochloride (32).

3.8

nitric acid (32).

3.9

sulfosalicylic acid solution (100g/L).

3.10

mixed extracting agent. 4-Methyl-2-pentanone (3.5) and isoamyl acetate (3.6) are mixed in equal volumes.

3.11

iron standard stock solution. Weigh 0.2859g ferric oxide ($w_{\text{Fe}_2\text{O}_3} > 99.98\%$), placed in 200mL beaker, add 15mL hydrochloric acid (3.1), cover sheet pan, dissolve totally cryogenic cooling, the solution is transferred 1000mL volumetric flask with water to volume, and mix.

This solution 1mL containing 200 μg iron.

3.12

Iron standard solution. Pipette 10.00mL iron standard stock solution (3.11) in 100mL volumetric flask, dilute to the mark, mix uniform. This solution 1mL containing 20 μ g iron.