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

YS/T 281.2-2011

Replacing YS/T 281.2-1994

**Methods for chemical analysis of cobalt. Part 2: Determination
of aluminum content. Chromeazurol S spectrophotometry**

钴化学分析方法 第2部分：铝量的测定铬天青S分光光度法

(English Translation)

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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 2.

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

The partial replacement of YS/T 281.2-1994 "Methods for chemical analysis of cobalt chrome azure S spectrophotometric determination of aluminum content." versus YS/T 281.2-1994 compared, this section there are major changes as follows.

--- Measured by the scope of 0.0003% ~ 0.002% revised to 0.00030% to 0.0050%;

--- Text format has been modified, supplemented with quality assurance and control provisions, increase 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 provides for determination of cobalt in aluminum content.

This section applies to the determination of cobalt in aluminum content. Measurement range. 0.00030% to 0.0050%.

2 Method summary

Sample was dissolved in nitric acid at pH4.6 ~ 5.2, the use of ethyl benzoate and aluminum benzoate cobalt extraction separation. With hydrochloric acid trans the organic phase was extracted aluminum. Aluminum and CAS S- bromo emulsifier OP- cypyrindinium form a complex at 610nm 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 ($\rho = 1.19\text{g/mL}$) of high purity.

3.2

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

3.3

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

3.4

hydrochloride (11).

3.5

hydrochloric acid (119).

3.6

ammonium hydroxide solution (120), stored in a plastic bottle.

3.7

nitric acid (32).

3.8

Chromium Azure S solution (1g/L). Weigh 0.20g Chromium Azure S dissolved in 100mL of water, diluted to 200mL with ethanol.

3.9

polyethylene glycol octylphenyl ether (emulsifier OP) solution (1999).

Bromo cylopyridinium 3.10 (TPB) solution (4g/L).

3.11

acetic acid - ammonium acetate buffer solution. A 485mL solution of ammonium acetate (4mol/L) was diluted to 500mL with acetic acid (4mol/L), Mix well.

3.12

ammonium benzoate solution (120g/L). Weigh 12g of ammonium benzoate was dissolved in water, adding 2 to 3 drops of ammonium hydroxide (3.3) dissolved End Full, dilute with water to 100mL.

3.13

Ammonium benzoate lotion (20g/L). Weigh 2g ammonium benzoate was dissolved in 100mL of water, carefully adjust the pH with dilute hydrochloric acid on pH meter is between 4.6 to 4.8.

3.14

benzoic acid - ethyl acetate solution (50g/L). Weigh 25g of benzoic acid dissolved in ethyl acetate, diluted to 500mL with ethyl acetate.

3.15

hydroxylamine hydrochloride solution (100g/L). the time is now equipped with.

3.16

ascorbic acid solution (10g/L). the time is now equipped with.