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YS

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

YS/T 820.21-2013

**Methods for chemical analysis of laterite nickel ores. Part 21:
Determination of chromium content. The ammonium-ferrous
sulfate titration method**

红土镍矿化学分析方法 第21部分：铬量的测定 硫酸亚铁铵滴定法
(English Translation)

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Foreword

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

YS/T 820 "Methods for chemical analysis of nickel laterite ore" is divided into 26 parts.

- Part 1. Determination of nickel content by flame atomic absorption spectrometry;
- Part 2. Determination of the amount of nickel dimethylglyoxime spectrophotometry;
- Part 3. Determination of total iron content of dichromate method;
- Part 4. Determination of phosphorus content - Molybdenum blue spectrophotometric method;
- Part 5. Determination of cobalt content by flame atomic absorption spectrometry;
- Part 6. Determination of copper content - Flame atomic absorption spectrometry;
- Part 7. Determination of calcium and magnesium content by flame atomic absorption spectrometry;
- Part 8. Determination of the amount of silica silicon potassium fluoride titration;
- Part 9. Determination of cadmium content of scandium and inductively coupled plasma - mass spectrometry;
- Part 10. calcium, cobalt, copper, magnesium, manganese, nickel, zinc and phosphorus content - Inductively Coupled Plasma - Atomic Emission Spectrometry;
- Part 11. Determination of the amount of fluorine and chlorine ion chromatography;
- Part 12. Determination of manganese content by flame atomic absorption spectrometry;
- Part 13. Determination of lead content by flame atomic absorption spectrometry;
- Part 14. Determination of zinc content - Flame atomic absorption spectrometry;
- Part 15. Determination of cadmium content by flame atomic absorption spectrometry;
- Part 16. Determination of the amount of carbon and sulfur by high frequency combustion

infrared absorption spectroscopy;

- Part 17. arsenic, antimony and bismuth contents hydride generation - atomic fluorescence spectrometry;
- Part 18. Determination of mercury content - Cold atomic absorption spectrometry;
- Part 19. Determination of energy aluminum, chromium, iron, magnesium, manganese, nickel and silicon content dispersive X-ray fluorescence spectrometry;
- Part 20. Determination of aluminum content by EDTA titration;
- Part 21. Determination of chromium content ammonium ferrous sulfate titration;
- Part 22. Determination of magnesium content EDTA titration;
- Part 23. cobalt, iron, nickel, phosphorus, aluminum oxide, calcium oxide, chromium oxide, magnesium oxide, manganese oxide, silicon dioxide and titanium dioxide volume Wavelength dispersive X-ray fluorescence spectrometry;
- Part 24. Determination of hygroscopic water weight method;
- Part 25. Determination of combined water content - Gravimetric method;
- Part 26. Determination of loss on ignition - Gravimetric method.

This section YS/T 820 21.

This method is a method of arbitration.

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

This in part by the Beijing General Research Institute of Mining and Metallurgy, People's Republic of China Bayuquan Exit Inspection and Quarantine, Jinchuan Group Ltd, Drafted.

This section is drafted. Guangzhou Nonferrous Metal Research Institute, People's Republic of China Bayuquan Exit Inspection and Quarantine.

Participated in the drafting of this section. Northwest Nonferrous Metal Research Institute, Beijing General Research Institute of Mining and Metallurgy.

1 Scope

This section YS/T 820 specifies the method for determination of nickel laterite ore chromium content.

This section applies to the determination of nickel laterite ore chromium content. Measuring range. 0.30% to 3.50%.

2 Method summary

Sample molten sodium peroxide to water leaching with sulfuric acid. Sulfuric mixed acid medium with silver nitrate as a catalyst, ammonium persulfate the chromium oxide to chromium (VI), on behalf of benzene with N- anthranilic acid as indicator, titration standard ferrous ammonium sulfate titration.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical grade reagents and distilled or deionized water or equivalent purity.

3.1

sodium peroxide.

3.2

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

3.3

phosphoric acid ($\rho = 1.70\text{g/mL}$).

3.4

hydrochloride (14).

3.5

sulfate (11).

3.6

sulfuric acid - phosphoric acid mixed. in 300mL water under constant stirring and cooling water was slowly added 200mL of sulfuric acid (3.2) and 100mL Phosphoric acid (3.3) and mix.

3.7

silver nitrate solution (10g/L), stored in brown bottles.

3.8

manganese sulfate solution (10g/L).

3.9

solution of ammonium persulfate (200g/L), the time is now equipped with.

3.10

N- benzene-generation anthranilic acid solution (2g/L). Weigh 0.2gN- benzene on behalf of anthranilic acid was dissolved in 100mL sodium carbonate solution (2g/L), and mix well.

3.11

standard potassium dichromate solution [$c(1/6K_2Cr_2O_7) = 0.0500\text{mol/L}$].

Weigh 2.4515g baseline potassium dichromate (pre-cooled at 150 °C and 2h drying in a dryer to room temperature), placed in 300mL burn Cup, dissolved in water and transferred to 1000mL volumetric flask, dilute with water to volume, and mix.

3.12

ammonium ferrous sulfate standard titration solution (0.05mol/L).

3.12.1

preparation. Weigh 20.0g of ferrous ammonium sulfate $[(NH_4)_2Fe(SO_4)_2 \cdot 6H_2O]$ in 500mL beaker, 200mL of water, Was added slowly with stirring 50mL sulfuric acid (3.2), is completely dissolved, cooled to room temperature, transferred to 1000mL volumetric flask, dilute to Mark and shake. Calibration when used.

3.12.2

indicator calibration and correction. in three 500mL Erlenmeyer flasks each adding a certain volume of standard potassium dichromate solution (3.11) (The content of chromium in a sample should be similar quality), was added 20mL sulfuric acid - phosphoric acid mixture (3.6), 80mL water, ferrous ammonium sulfate standard drops