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

YS/T 820.4-2012

**Methods for chemical analysis of laterite nickel ores. Part 4:
Determination of phosphorus content. Phosphorus
molybdenum blue spectrophotometry**

红土镍矿化学分析方法 第4部分：磷量的测定 钼蓝分光光度法

(English Translation)

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Foreword

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

YS/T 820-2012 "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. scandium, cadmium content - 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. carbon, sulfur content was measured by high frequency combustion infrared

absorption spectroscopy;

--- Part 17. arsenic, antimony, 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 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 4820-2012 Part of.

This standard by the national non-ferrous metals Standardization Technical Committee (SAC/TC243) centralized.

This standard by the Beijing General Research Institute of Mining and Metallurgy, People's Republic of China Bayuquan Exit Inspection and Quarantine, Jinchuan Nonferrous Metals Group Company is responsible Drafted.

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1 Scope

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

This section applies to the determination of phosphorus content of nickel laterite ore.
Measurement range. 0.003% to 0.100%.

2 Method summary

Samples with hydrochloric acid, nitric acid, hydrofluoric acid decomposition with perchloric smoke rush fluorine and phosphoric acid partial oxidation of ortho-phosphoric acid. In sulfuric acid, phosphorus Formation of molybdenum with ammonium molybdate yellow phosphorus, ascorbic acid is reduced to the phosphorus molybdenum yellow phosphorus molybdenum blue at 690nm wavelength spectrophotometer measured at its absorption Luminosity.

3 Reagents

Unless otherwise indicated in the analysis using only confirmed for the gifted class pure reagents and distilled or deionized water or equivalent purity.

3.1

hydrochloride (rho1.19g/mL).

Nitrate 3.2 (rho1.42g/mL).

3.3

perchloric acid (rho1.67g/mL).

3.4

Hydrofluoric acid (rho1.15g/mL).

3.5

Ammonia (rho0.91g/mL).

3.6

sulfate (rho1.84g/mL).

3.7

hydrobromide (rho1.48g/mL).

3.8

sulfate (23).

3.9

sulfate (11).

3.10

Phenolphthalein indicator. 2.5g phenolphthalein dissolved in 500mL of ethanol.

3.11

hydrochloric acid - a mixture of hydrogen bromide. Two parts of hydrochloric acid (3.1) and a hydrobromide (3.7) and mixed.

3.12

bismuth nitrate - sulfuric acid solution. Weigh 10g of bismuth nitrate $[\text{Bi}(\text{NO}_3)_3 \cdot 5\text{H}_2\text{O}]$ in 400mL beaker, add 25mL of nitric acid (3.2), dissolved by heating, add water to about 100mL, heated to expel nitrogen oxides, 100mL added sulfuric acid (3.9), cooled to room temperature, diluted with water to 1000mL, and mix.

3.13

ammonium molybdate solution (50g/L). Weigh 25g of ammonium molybdate $[(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}]$ was dissolved in 500mL boiling water.

3.14

ascorbic acid - ethanol solution. Weigh 2g ascorbic acid dissolved in 50mL water, adding 50mL ethanol, and mix (with the preparation).

3.15

P standard stock solution. Weigh 0.4394g previously dried to constant weight of potassium dihydrogen phosphate in 110 °C (KH_2PO_4) (reference reagent) Dissolved in water and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 100 μg phosphorus.

3.16

Phosphorus standard solution. Pipette 50.00mL phosphorus standard stock solution (3.15) in 1000mL volumetric flask, dilute to the mark, mix uniform. This solution 1mL containing 5 μg phosphorus.