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

YS/T 820.18-2012

**Methods for chemical analysis of laterite nickel ores. Part 18:
Determination of mercury content. Cold atomic absorption
spectrometry**

红土镍矿化学分析方法 第18部分：汞量的测定 冷原子吸收光谱法
(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 determination by 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, 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 820-2012 Part 18.

This method is a method of arbitration.

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 Group Ltd, Drafted.

This section is drafted. Guangzhou Nonferrous Metal Research Institute.

Participated in the drafting of this section. Beijing Mining Research Institute, People's Republic of China Bayuquan Entry-Daye Nonferrous it belongs to Group Holdings Ltd, People's Republic of China Changshu Exit Inspection and Quarantine.

1 Scope

This section YS/T 820 provides for the determination of mercury content of nickel laterite ore.

This section applies to the determination of the amount of mercury nickel laterite ore.
Measurement range. 0.00005% to 0.010%.

2 Method summary

Samples with hydrochloric acid - nitric acid dissolution mixed with stannous chloride solution in reducing mercury ions to metallic mercury, in cold vapor atomic absorption the measurement of mercury vapor in absorbance at a wavelength of 253.7nm.

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

nitrate (ρ 1.42g/mL). pure class distinctions.

3.2

hydrochloric acid (ρ 1.19g/mL). pure class distinctions.

3.3

mixed acid. nitric acid (3.1), hydrochloric acid (3.2) with water to 134 volume mixing ratio.

3.4

potassium dichromate solution (25g/L).

3.5

potassium dichromate - nitric acid solution. Weigh 0.5g potassium dichromate, dissolved in water was added 50mL of nitric acid (3.1) and transferred to 1000mL capacity Volumetric flask, dilute to the mark and mix.

3.6

stannous chloride solution (200g/L). Weigh 20g of stannous chloride ($\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$), was dissolved in 20mL of hydrochloric acid (3.2) and transferred to 100mL volumetric flask, dilute with water to volume, and mix.

3.7

Storage mercury standard solution. Weigh 0.1354g advance through the dryer sufficiently dried mercury dichloride ($w_{\text{HgCl}_2} \geq 99.95\%$) in 100mL beaker, 5mL nitric acid (3.1) and a small amount of water, heat gently to dissolve and transferred to 1000mL volumetric flask, using potassium dichromate - nitrate Acid solution (3.5) diluted to the mark, and mix. This solution 1mL containing 100 μg mercury.

3.8

mercury standard solution. Pipette 10.00mL mercury standard stock solution (3.7) in 100mL flask with potassium dichromate - nitric acid solution (3.5) diluted to the mark, and mix. This solution 1mL containing 10 μ g mercury.

3.9

mercury standard solution. Pipette 2.00mL mercury standard solution (3.8) in 200mL flask with potassium dichromate - nitric acid solution (3.5) dilute Diluted to volume, and mix. This solution 1mL containing 0.1 μ g of mercury (used when existing service).

4 Instrument

Cold vapor atomic absorption mercury analyzer.

5 Sample

The sample size should be less than 160 μ m.