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

YS/T 820.10-2012

**Methods for chemical analysis of laterite nickel ores - Part 10: Determination of
calcium, cobalt, copper, magnesium, manganese, nickel, phosphate and zinc
content - Inductively coupled plasma atomic emission spectrometry**

红土镍矿化学分析方法 第10部分：钙、钴、铜、镁、锰、镍、磷和锌量的测定
电感耦合等离子体-原子发射光谱法

(English Translation)

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Foreword

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

YS/T 820-2012 "Methods for chemical analysis of laterite nickel ores" is divided into 26 parts.

- Part 1.Determination of nickel content - Flame atomic absorption spectrometry;
- Part 2.Determination of nickel content - Dimethylglyoxime spectrophotometry;
- Part 3.Determination of total iron content - Potassium dichromate titration;
- Part 4.Determination of phosphorus content - Phosphorus molybdenum blue spectrophotometry;
- Part 5.Determination of cobalt content - Flame atomic absorption spectrometry;
- Part 6.Determination of copper content - Flame atomic absorption spectrometry;
- Part 7.Determination of calcium and magnesium content - Flame atomic

absorption spectrometry;

- Part 8.Determination of silica content - Potassium silicafluoride titrimetric method;

- Part 9.Determination of scandium and cadmium contents - Inductively coupled plasma mass spectrometry;

- Part 10.Determination of calcium, cobalt, copper, magnesium, manganese, nickel, phosphate and zinc content - Inductively coupled plasma atomic emission spectrometry;

- Part 11.Determination of fluorine and chlorine contents - Ion chromatography;

- Part 12.Determination of manganese content - Flame atomic absorption spectrometry;

- Part 13.Determination of lead content - Flame atomic absorption spectrometry;

- Part 14.Determination of the zinc content - Flame atomic absorption spectrometry;

- Part 15.Determination of cadmium content - flame atomic absorption spectrometry;

- Part 16.Determination of carbon and sulfur content - High-frequency combustion with infrared absorption spectrometry;

- Part 17.Determination of arsenic, antimony and bismuth contents - Hydride generation-atomic fluorescence spectrometry;

- Part 18.Determination of mercury content - Cold atomic absorption spectrometry;

- Part 19.Determination of aluminum, chromium, iron, magnesium, manganese, nickel and silicon contents - Energy-dispersive X-ray fluorescence spectroscopy;

- Part 20.Determination of aluminum content - EDTA titration;

- Part 21.Determination of chromium content - The ammonium-ferrous sulfate titration method;
- Part 22.Determination of Magnesium Content - EDTA Titration;
- Part 23.Determination of cobalt, iron, nickel, phosphorus, aluminum oxide, calcium oxide, chromium oxide, magnesium oxide, manganese oxide, silicon dioxide and titanium dioxide content - Wavelength dispersive;
- Part 24.Determination hygroscopic moisture content - Gravimetric method;
- Part 25.Determination of combined water content - Gravimetric method;
- Part 26.Determination of loss on ignition - Gravimetric method.

This part is part 10 of YS/T 820-2012.

This standard shall be under the jurisdiction of the National Nonferrous Metals Standardization Technical Committee (SAC/TC 243).

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1 Scope

This part of YS/T 820 specifies the method for determining calcium, cobalt, copper, magnesium, manganese, nickel, phosphate and zinc content in laterite nickel ores.

This part applies to the simultaneous determination of calcium, cobalt, copper,

magnesium, manganese, nickel, phosphorus and zinc contents in laterite nickel ores. The range of determination is as shown in Table 1.

Table 1 -- Range of determination (mass fraction)

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

YS/T 820.24-2012 Methods for chemical analysis of laterite nickel ores - Part

24 Determination hygroscopic moisture content - Gravimetric method

Element Range of determination / %

3 Summary of methods

The sample is decomposed by hydrochloric acid, nitric acid, hydrofluoric acid and perchloric acid. The salts are dissolved by hydrochloric acid.

4 Reagents

Unless otherwise stated, only reagents identified as superior grade and the distilled or deionized water or water of comparable purity are used in the analysis.

4.7 Calcium standard stock solution. WEIGH 1.2486 g of calcium carbonate

(wCaCO₃ ≥ 99.99%, which is dried in advance at 105 °C ± 5 °C and cooled in a desiccator to room temperature); PLACE it in a 300 mL beaker; ADD 20 mL of water; MIX it uniformly; COVER the watch glass; carefully ADD hydrochloric acid (4.2) to dissolve calcium carbonate; ADD another 30 mL of hydrochloric acid (4.2); BOIL it to remove carbon dioxide; REMOVE and COOL it to room temperature; USE water to rinse the watch glass and beaker's wall;