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

YS/T 3015.3-2013

**Methods for chemical analysis of gold-loaded carbon. Part3:
Determinaiton of calcium and magnesium contents. Flame
atomic absorption spectrometry**

载金炭化学分析方法 第3部分：钙和镁量的测定火焰原子吸收光谱法
(English Translation)

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Foreword

YS/T 3015 "loaded carbon chemical analysis methods" is divided into four parts.

--- Part 1. Determination of moisture content of the dry weight method;

--- Part 2. Determination of copper and iron content by flame atomic absorption spectrometry;

--- Part 3. Determination of the amount of calcium and magnesium by flame atomic absorption spectrometry;

--- Part 4. Copper, iron, calcium and magnesium content - Inductively coupled plasma atomic emission spectrometry.

This section YS/T 3015 Part 3.

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

This part is proposed by the China Gold Association.

This part of the National Gold Standardization Technical Committee (SAC/TC379) centralized.

This section is drafted. Zijin Mining Group Co., Lingbao Gold Company Ltd., Changchun Gold Research Institute, Henan Zhongyuan Gold Smelter Co., Ltd., Shandong National Gold Corp..

1 Scope

This section YS/T 3015 specifies the method for determination of loaded carbon calcium and magnesium content.

This section applies to the determination of gold contained in the carbon content of calcium and magnesium. Measurement range. 0.050% - 2.0% Ca; Mg 0.010% to 0.50%.

2 Method summary

The sample was burning ashed with hydrochloric acid, nitric acid to dissolve the residue. In dilute hydrochloric acid medium, flame atomic absorption spectrometer wavelength 422.7nm and 285.2nm at using air - acetylene flame, were measured absorbance of calcium and magnesium, calcium calculated according to the standard curve and Magnesium content.

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

hydrochloric acid ($\rho = 1.19\text{g/mL}$).

3.2

hydrochloride (11).

3.3

hydrochloride (14).

3.4

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

3.5

strontium chloride solution. Weigh 25g strontium chloride ($\text{SrCl}_2 \cdot 6\text{H}_2\text{O}$) in 400mL beaker was added 200mL of water, stirring to dissolve and transferred to 500mL volumetric flask, dilute with water to volume, and mix.

3.6

lanthanum chloride solution. Weigh 50g of lanthanum chloride ($\text{LaCl}_3 \cdot 7\text{H}_2\text{O}$) in 400mL beaker, 200mL of water, stirring to dissolve, move Into 500mL volumetric flask, dilute with water to volume, and mix.

3.7

Calcium standard stock solution. Weigh 2.4973g by $105^\circ\text{C} \sim 110^\circ\text{C}$ drying calcium carbonate (reference reagent) in 250mL beaker, Was added 50mL of hydrochloric acid (3.2), covered with a watch glass, low heat until completely dissolved, heating to boil 1min ~ 2min, removed and cooled to room temperature.

Moved into 1000mL volumetric flask, dilute to the mark, mix and store in a plastic bottle. 1mL solution containing 1mg calcium.

3.8

Magnesium standard stock solution. Weigh 1.6583g ignition at 800 °C to constant weight of magnesium oxide (reference reagent) in 250mL beaker, add Into 50mL of hydrochloric acid (3.2), covered with a watch glass, low heat until completely dissolved, remove the cooling to room temperature. Moved into 1000mL volumetric flask, Diluted with water to the mark, mix and store in a plastic bottle. This solution 1mL 1mg containing magnesium.

3.9

calcium, magnesium mixed standard solution. Pipette 25.00mL calcium standard stock solution (3.7) and magnesium 25.00mL standard stock solution (3.8) to 250mL flask, add 20mL of hydrochloric acid (3.3), dilute to the mark, mix and store in a plastic bottle. This solution containing 1mL 100μg calcium and magnesium.

4 Instrument

Atomic absorption spectrometer, with calcium and magnesium hollow cathode lamp hollow cathode lamp.