

ICS 77.120.70
CCS H 13

YS

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

YS/T 349.3-2010

Replacing YS/T 349-1994

**Methods for chemical analysis of cobalt sulfide concentrate.
Part 3: Determination of manganese content. Flame atomic
absorption spectrometry**

硫化钴精矿化学分析方法 第3部分：锰量的测定火焰原子吸收光谱法
(English Translation)

Issued on: November 22, 2010

Implemented on: March 1, 2011

Issued by: Ministry of Industry and Information Technology

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Foreword

YS/T 349 "cobalt sulfide concentrates - the method" is divided into four parts.

- Part 1. Determination of cobalt content potentiometric titration;
- Part 2. Determination of copper content - Flame atomic absorption spectrometry;
- Part 3. Determination of manganese content by flame atomic absorption spectrometry;
- Part 4. Determination of the amount of silica potassium fluosilicate volumetric method.

This is Part 3.

The partial replacement of YS/T 349-1994 Determination of manganese content part of "matte cobalt concentrate chemical analysis methods", and YS/T 349-1994 phase Ratio, this section there are major changes as follows.

- Analysis by a colorimetric potassium periodate to flame atomic absorption spectrometry;
- Measurement range is defined as. 0.1% to 1%;
- Supplementary terms of quality assurance and control, increasing the precision of the terms.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

This section is responsible for drafting Jinchuan Group Limited.

This in part by the Beijing General Research Institute of Mining and Metallurgy, Beijing Nonferrous Metal Research Institute, CRIMM participate in the drafting.

1 Scope

This section YS/T 349 specifies the method for determination of cobalt sulfide concentrate manganese content.

This section applies to the determination of cobalt sulfide concentrate manganese content.

Measurement range. 0.1% to 1%.

2 Method summary

Samples with hydrochloric acid, nitric acid, perchloric acid decomposition, 2% hydrochloric acid medium with an air - acetylene flame atomic absorption spectrometer wavelength 279.5nm at measuring the absorbance, the standard curve method to calculate the amount of manganese. Iron content 3 Reagents Unless otherwise specified, the reagents were analytical reagent, which is a distilled water or equivalent purity water.

3.1 ammonium hydrogen fluoride.

3.2 hydrochloride (rho1.19g/mL).

Nitrate 3.3 (rho1.42g/mL).

3.4 perchloric acid (rho1.67g/mL).

3.5 Hydrofluoric acid (rho1.15g/mL).

3.6 manganese standard stock solution. Weigh 1.0000g metal manganese (Mn mass fraction $\geq 99.95\%$) placed in 500mL beaker, add 20mL of nitric acid (11) was completely dissolved, evaporated to near dryness, cooled, hydrochloric acid was added 10mL, add a little water, dissolved salts boiled, cooled and transferred to 1000mL volumetric flask, constant volume of water. 1mL solution containing 1mg manganese.

3.7 manganese standard solution. Pipette 15.00mL manganese standard stock solution (3.6) in 500mL volumetric flask, was added 5mL hydrochloric acid (3.2) to Water volume. This solution 1mL containing 30 μ g manganese.

4 Instrument

Atomic absorption spectrometer, with a manganese hollow cathode lamp.

Under optimum working conditions for those who can reach the following indicators can be used;

--- Sensitivity. basically the same test solution and measurement solution, characteristic concentration of manganese should not exceed 0.05 μ g/mL;

--- Precision. standard solution with the highest concentration of 10 times the absorbance measurements, the standard deviation should not exceed the average absorbance of 1.0%;

The lowest concentration of standard solution used (instead of "zero" standard solution) absorbance measured 10 times, and the standard deviation should not exceed the maximum concentration 0.5% of the mean absorbance of the standard solution;

--- Linear curve. The curve is divided into five sections according to concentration,

absorbance difference between the absorbance difference between the highest and the lowest segment of the segment Ratio of not less than 0.80.

Atomic absorption spectrometer operating conditions refer to Table 1.