

ICS 77.120.60

CCS H 13



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 3884.10-2012

Replacing GB/T 3884.10-2000

**Methods for chemical analysis of copper concentrates -- Part
10: Determination of Antimony content -- Hydride generation
atomic fluorescence spectrometry method**

铜精矿化学分析方法 第10部分：锑量的测定 氢化物发生-原子荧光光谱法

(English Translation)

Issued on: January 1, 1970

Implemented on: January 1, 1970

Issued by: Standardization Administration of China

Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents

Foreword

GB/T 3884 "Methods for chemical analysis of copper concentrate" is divided into 14 parts.

- Part 1. Determination of copper content iodometry;
- Part 2. Determination of the amount of gold and silver by flame atomic absorption spectroscopy and fire assay;
- Part 3. Determination of sulfur content - Gravimetric and combustion - titration;
- Part 4. Determination of magnesium oxide content - Flame atomic absorption spectrometry;
- Part 5. Determination of the amount of fluorine ion selective electrode method;
- Part 6. Determination by flame atomic lead, zinc, cadmium and nickel absorption spectrometry;
- Part 7. Determination of lead content Na₂EDTA titration;
- Part 8. Determination of zinc contents Na₂EDTA titration;
- Part 9. Determination of the amount of arsenic and bismuth hydride generation - atomic fluorescence spectrometry, potassium bromate titration and diethyl ammonia Silver group acid spectrophotometry;
- Part 10. Determination of antimony content hydride generation - atomic fluorescence spectrometry;
- Part 11. Determination of mercury content - Cold atomic absorption spectrometry;
- Part 12. Determination of the amount of fluorine and chlorine ion chromatography;
- Part 13. Determination of the amount of copper electrolysis;
- Part 14. Determination of the amount of gold and silver fire assay gravimetric method and atomic absorption spectrometry.

This section 10.

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

This Part replaces GB/T 3884.10-2000 "Methods for chemical analysis of copper concentrates Determination of antimony content", and GB/T 3884.10-2000 Compared mainly the following changes.

--- Text format has been modified;

--- Supplementary terms of precision and test reports;

--- Antimony measurement range from "0.01% to 0.20%" to "from 0.01% to 0.70%." the non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

This section is responsible for drafting unit. Daye Nonferrous Metals Group Holdings Limited.

This section is drafted. Jiangxi Copper Company Limited.

Participated in the drafting of this section. Yunnan Copper Co., Ltd., Beijing Mining Research Institute, Guangzhou Nonferrous Metal Research Institute, Yanggu Yoshimitsu Copper Co., Zijin Mining Group Co., Ltd.

1 Scope

GB/T 3884 provisions of this part of the determination of antimony content in copper concentrates.

This section applies to the determination of antimony content in copper concentrates. Determination range of 0.010% to 0.60%.

2 Method summary

Sample decomposition with sulfuric acid and potassium, iron, and the use of lanthanum added a certain amount of test compound contained in the ammonia medium, co-precipitation and antimony Copper separation. The precipitate was dissolved in hydrochloric acid and heat, get a portion of the solution was added ascorbic acid pre-reduction, thiourea copper. Pipette a certain amount of fluid to be tested Hydride generator, antimony (III) by potassium borohydride reduction of antimony hydride, with argon gas was introduced into the quartz furnace atomizer, a hollow cathode lamp as antimony Light, fluorescence intensity was measured on the atomic fluorescence spectrometer.

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

potassium sulfate.

3.2

tartaric acid.

3.3

sodium hydroxide.

3.4

sulfate ($\rho = 1.84\text{g/mL}$).

3.5

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

3.6

nitric acid (11).

3.7

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

3.8

hydrochloride (19).

Aqueous ammonia 3.9 ($\rho = 0.90\text{g/mL}$).

3.10

ammonia (595).

3.11

thiourea solution (100g/L).

3.12

ascorbic acid solution (100g/L).

3.13

of potassium hydroxide (2g/L).

3.14

lanthanum nitrate solution. Weigh 11.73g of lanthanum oxide (La_2O_3) in 250mL beaker, add 40mL of nitric acid (3.6), low temperature dissolution, Heated to remove oxides of nitrogen, cooled and transferred to 500mL volumetric flask, dilute with water to volume, and mix. This solution containing 1mL 20mg lanthanum.

3.15

lanthanum nitrate solution. Pipette 10mL lanthanum nitrate solution (3.14) in 200mL volumetric flask, dilute with water to volume, and mix. This solution 1mL 1mg solution containing lanthanum.

3.16

ferric nitrate solution. Weigh 73.40g of ferric nitrate $[\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}]$ in 250mL beaker, add 10mL of nitric acid (3.6), add water to dissolve and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 10mg iron.