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

GB/T 3884.6-2012

Replacing GB/T 3884.6-2000

**Methods for chemical analysis of copper concentrates -- Part 6:
Determination of lead, zinc, cadmium and nickel content --
Flame atomic absorption spectrometry method**

铜精矿化学分析方法 第6部分：铅、锌、镉和镍量的测定

(English Translation)

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Foreword

This standard rule according to GB/T 1.1-2009 given draft.

GB/T 3884 "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.

Part is divided into 6 sections.

This Part replaces GB/T 3884.6-2000 "Methods for chemical analysis of copper concentrates of lead, zinc, cadmium and nickel content determination", and GB/T 3884.6-2000 compared mainly the following changes.

--- Text format has been modified;

--- Supplementary terms of precision and test reports.

This standard by the national non-ferrous metals Standardization Technical Committee (SAC/TC243) centralized.

1 Scope

This section GB/T 3884 provides for determination of copper concentrates of lead, zinc, cadmium and nickel content.

This section applies to the determination of copper concentrates of lead, zinc, cadmium and nickel content. Measurement range in Table 1.

Table 1 Measuring range

Element Pb Zn Cd Ni

Measuring range /% 0.10 to 5.00 0.10 to 1.00 1.00 0.010 0.50 0.010 -

2 Method summary

Sample decomposition with hydrochloric acid, dilute nitric acid medium, air - acetylene flame atomic absorption spectrometer wavelength listed in Table 2, the measurement the absorbance of each element, deduct background absorption, according to the standard curve method to calculate the content of each element.

Table 2 Measurement wavelength

Element Pb Zn Cd Ni

Wavelength/nm 283.3 213.9 228.8 232.0

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

bromine.

3.2

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

3.3

perchloric acid ($\rho=1.67\text{g/mL}$).

Nitrate 3.4 ($\rho=1.42\text{g/mL}$).

3.5

nitric acid (11).

3.6

lead standard stock solution. Weigh 1.0000g pure lead ($w_{\text{Pb}}\geq 99.99\%$) in 200mL beaker, add 10mL of nitric acid (3.5), Covered with a watch glass placed on a hot plate over low heat until completely dissolved, NOx purge boiling, cooled to room temperature. Transferred 500mL volumetric flask Added 20mL of nitric acid (3.5), diluted with water to volume, and mix. 1mL solution containing 2mg lead.

3.7

standard zinc stock solution. Weigh 0.5000g pure zinc ($w_{\text{Zn}}\geq 99.99\%$) in 200mL beaker, add 10mL of nitric acid (3.5), Covered with a watch glass placed on a hot plate over low heat until completely dissolved, NOx purge boiling, cooled to room temperature. Transferred 1000mL volumetric flask Added 20mL of nitric acid (3.5), diluted with water to volume, and mix. This solution 1mL containing 0.5mg zinc.

3.8

cadmium standard stock solution. Weigh 0.5000g metal cadmium ($w_{\text{Cd}}\geq 99.99\%$) in 200mL beaker, add 10mL of nitric acid