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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 15249.5-2009

Replacing GB/T 15249.5-1994

Methods for chemical analysis of crude gold - Part 5: Determination of mercury content - Cold atomic absorption spectrometry

合质金化学分析方法 第5部分：汞量的测定 冷原子吸收光谱法

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Foreword

GB/T 15249 "Crude Gold analysis method" is divided into the following five sections.

--- Part 1. Determination of the amount of gold fire assay gravimetric method;

--- Part 2. Determination of the amount of silver fire assay gravimetric and EDTA titration;

--- Part 3. Determination of copper content iodometry;

--- Part 4. Determination of lead content EDTA titration;

--- Part 5. Determination of mercury content - Cold atomic absorption spectrometry. This section GB/T 15249 Part 5. This Part replaces GB/T 15249.5-1994 "Crude Gold analysis of cold vapor atomic absorption spectrometry of mercury content." This section compared with the GB/T 15249.5-1994, have the following main changes.

--- Text format has been modified;

--- Instrument requirements, sensitivity to the characteristic concentration;

--- Remove the "allowable difference" clause;

--- Added "precision" clause (repeatability and reproducibility);

--- Increased quality assurance and control provisions. This section proposed by the People's Bank of China. This part of the National Standardization Technical Committee on Finance (SAC/TC180) centralized. This section is responsible for drafting unit. Beijing General Research Institute of Mining and Metallurgy. Participated in the drafting of this section. Chengdu Banknote Printing Company, Changchun Gold Research Institute, Shenyang Mint, Shanghai and Nanjing Mint Mint. The main drafters of this section. to force Tangshu Fang, Sun high age, Liu Chunfeng. This part of the standard replaces the previous editions are.

--- GB/T 15249.5-1994. Crude Gold Analysis Part 5. Determination of the amount of

mercury Cold vapor atomic absorption spectrometry

1 Scope

GB/T 15249.5-2009 is the Chinese national standard on methods for chemical analysis of crude gold - part 5: determination of mercury content - cold atomic absorption spectrometry, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 6 May 2009 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 October 2009. Classification: ICS 77.120.70, CCS H15. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This section GB/T 15249 specifies the method for the determination of the amount of mercury in crude gold. This Part applies in determining the amount of mercury (gold mining, smelting and recycling crude metal products such as gold) in crude gold. Determination of mercury content range. 0.0050% to 0.050%.

2 Principle of the method

Dilute nitric acid, hydrochloric acid sample decomposition of crude gold, silver chloride precipitate is removed by filtration to separate silver and gold mask with potassium thiocyanate, in strong alkaline medium In order to restore the tin dichloride of mercury compounds into atomic mercury, measured at a wavelength 253.7nm of mercury cold vapor atomic absorption spectrometry.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical reagents and secondary distilled or deionized water or equivalent purity. After the containers are used in the experiments with dilute nitric acid (1 + 4) soaked 12h, washed thoroughly with water.

3.1 hydrochloric acid (rho1.19g/mL), pure class distinctions.

3.2 nitrate (rho1.42g/mL), pure class distinctions.

3.3 potassium dichromate solution (10g/L).

3.4 solution of potassium thiocyanate (100g/L).

3.5 zinc acetate solution (50g/L).

3.6 tin dichloride solution (100g/L). Weigh 10g tin dichloride in hydrochloric acid 10mL, diluted with water heated to dissolve 100mL.

3.7 Sodium hydroxide solution (100g/L). More than

3.8 mercury absorption solution (10g/LKMnO4-1.8mol/LH2SO4).

3.9 Storage mercury standard solution. Weigh 0.1354g mercury dichloride dissolved in a little water, and 50mL of nitric acid (3.2), 10mL dichromate Potassium solution (3.3) and transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution 1mL 0.1000mg containing mercury (in solution Within five months of use).

3.10 Mercury standard solution

3.10.1 Pipette 10.00mL mercury standard stock solution (3.9) in 100mL flask, add 5mL nitric acid (3.2), 1mL dichromate Potassium solution (3.3), diluted with water to volume, and mix. This solution 1mL 10.00μg containing mercury (solution used within two months).

3.10.2 Pipette 1.00mL mercury standard solution (3.10.1) in 100mL flask, add 1mL potassium dichromate (3.3), diluted with water To the mark, and mix. This solution 1mL containing 0.100μg Mercury.

4 Instrument

Cold vapor atomic absorption mercury analyzer, with GP3 type mercury lamp. Under optimum working conditions for those who can reach the following indicators can be used.

--- Characteristic concentration. the test solution and measurement matrix consistent solution, the mercury concentration characteristic should not exceed 0.05 x 10-9μg/mL.

--- 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.