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

GB/T 11066.9-2009

**Methods for chemical analysis of gold - Determination of
arsenic and tin contents - Hydride generation-atomic
fluorescence spectrometry**

金化学分析方法 砷和锡量的测定 氢化物发生—原子荧光光谱法

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Foreword

GB/T 11066 "Methods for chemical analysis of gold" is divided into the following 10 sections.

--- GB/T 11066.1 gold chemical analysis method of determining the amount of gold fire assay;

--- GB/T 11066.2 gold chemical analysis of silver content - Flame atomic absorption spectrometry;

--- GB/T 11066.3 gold chemical analysis of iron content by flame atomic absorption spectrometry;

--- Flame atomic GB/T 11066.4 gold chemical analysis of copper, lead and bismuth contents absorption spectrometry;

--- GB/T 11066.5 gold chemical analysis method for determination of atomic silver, copper, iron, lead, antimony and bismuth amount of emission spectrometry;

--- GB/T 11066.6 gold chemical analysis of magnesium, nickel, manganese, and palladium contents - Flame atomic absorption spectrometry;

--- GB/T 11066.7 gold chemical analysis of silver, copper, iron, lead, antimony, bismuth, palladium, magnesium, tin, nickel, manganese and chromium contents - fire Flower atomic emission spectrometry;

--- GB/T 11066.8 gold chemical analysis of silver, copper, iron, lead, antimony, bismuth, palladium, magnesium, nickel, manganese and chromium contents - ethyl acetate Ester extraction - inductively coupled plasma atomic emission spectrometry;

--- GB/T 11066.9 gold chemical analysis method for determination of arsenic and tin hydride generation - atomic fluorescence spectrometry;

--- GB/T 11066.10 Determination of gold chemical analysis of silicon content - Molybdenum blue spectrophotometric method. This section GB/T Part of 911,066. Appendix A of this section is an informative annex. This part is proposed by the China Nonferrous Metals

Industry Association. The non-ferrous metal part by the National Standardization Technical Committee. This section is responsible for drafting unit. Chengdu Banknote Printing Company, China Nonferrous Metals Industry Standards and Metrology Institute for Quality. Participated in the drafting of this section. Beijing Mining Research Institute, Shenyang Mint, Jiangxi Copper Company, Jinchuan Group, Zijin Mining Set Group Co., Ltd., Beijing Institute of Aeronautical Materials. The main drafters of this section. to force, Fu Bin, Tangshu Fang, Long Shujie, Chen Jie, Wang Yu, Yu Shengjie, Liu peers, in long Zhen, pearl summer, Li Chunxiang, accounting for light cents Luqiu Lan, Zhu Muping. Determination of gold chemical analysis of arsenic and tin content Hydride Generation - Atomic Fluorescence Spectrometry

1 Scope

GB/T 11066.9-2009 is the Chinese national standard on methods for chemical analysis of gold - determination of arsenic and tin contents - hydride generation-atomic fluorescence 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 15 April 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 February 2010. Classification: ICS 77.040.30, 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.

GB/T 11066 provisions of this part of the gold and arsenic determination of the amount of tin. This section applies to the determination of gold and tin in the amount of arsenic. Measurement range. 0.0002% arsenic to 0.0050%; 0.0002% Sn 0.0050%.

2 Method summary

Sample the mixed acid is dissolved at risk of sulfur trioxide smoke temperature, precipitation of gold, gold decantation filter. In hydrochloric acid (1 + 9) medium, In the presence of potassium borohydride, the filtrate Arsenic (III) by potassium borohydride reduction to arsenic hydride, filtrate tin (II) by potassium borohydride reduction of tin Hydride with argon introduced into a quartz furnace atomizer, on the atomic fluorescence spectrometer were used to measure the fluorescence intensity arsenic and tin.

3 Reagents

Unless otherwise indicated in the analysis using only recognized as analytical reagents and secondary distilled water or equivalent purity.

3.1 mixed acid. 1 part of nitric acid (rho about 1.42g/mL, excellent pure) and 3 parts of hydrochloric acid (rho about 1.19g/mL, superior grade pure) and 3 parts water Mix well.

3.2 sulfuric acid (1 + 1), pure class distinctions.

3.3 hydrochloric acid (1 + 1), pure class distinctions.

3.4 hydrochloric acid (1 + 9), pure class distinctions. Sulfite 3.5 (1 + 1). Thiourea 3.6 - ascorbic acid solution (50g/L). Weigh 5g thiourea, 5g ascorbic acid, dissolved in water and diluted to 100mL, Mix well.

3.7 solution of potassium borohydride (25g/L). Weigh 7.5g of potassium borohydride, dissolved 300mL 5.0g/L potassium hydroxide solution, and mix. use When existing service.

3.8 arsenic standard stock solution. Weigh 0.1320g trioxide (reference reagents, at 100 °C ~ 105 °C baking 1h), placed in 150mL Beaker, was added 5mL sodium hydroxide solution (200g/L), low-temperature heating to be completely dissolved, was added 50mL of water, 1 drop of phenolphthalein ethanol solution Solution (1g/L), with sulfuric acid (1 + 4) and to the red and then just disappear excess 2mL, moved into 1000mL volumetric flask, dilute to the mark with water, Mix well. This solution 1mL containing 100µg arsenic.

3.9 Storage tin standard solution. Weigh 0.1000g metal tin (mass fraction greater than 99.99%) (washed with dilute hydrochloric acid prior to said surface oxide, Dry thoroughly washed with ethanol) was placed in 250mL beaker, add 100mL of hydrochloric acid, dissolved by heating low temperature, cooled and transferred to 1000mL container Volumetric flask, dilute with water to volume, and mix. This solution 1mL tin containing 100µg.

3.10 arsenic standard solution. Pipette 10.00mL arsenic standard stock solution (3.8) in 100mL volumetric flask, was added 4mL hydrochloric acid (3.3), Dilute to volume, and mix. This solution 1mL containing 1µg of arsenic.

3.11 tin standard solution. Pipette 10.00mL tin standard stock solution (3.9) in 100mL volumetric flask, was added 4mL hydrochloric acid (3.3), Diluted with water to volume, and mix. This solution 1mL containing 1µg tin.

3.12 argon (mass fraction of not less than 99.95%).

4 Instrument

Intermittent flow dual-channel non-dispersive hydride atomic fluorescence spectrometer, with a quartz furnace atomizer and arsenic hollow cathode lamp, intermittent flow meter