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

GB/T 11066.4-2008

Replacing GB/T 11066.4-1989

**Methods for chemical analysis of gold - Determination of
copper, lead and bismuth contents - Flame atomic absorption
spectrometry**

金化学分析方法 铜、铅和铋量的测定 火焰原子吸收光谱法

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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;

--- Flame atomic GB/T 11066.6 gold chemical analysis of iron, nickel, manganese, and palladium 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 -ICP-AES method;

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

--- GB/T 11066.10 chemical analysis of gold - Determination of silicon content of silicon molybdenum blue spectrophotometric method. This is Part 4. This Part replaces GB /determination of copper, lead, bismuth and antimony T 11066.4-1989 "gold chemical analysis by flame atomic absorption spectrometry the amount". Compared with GB/T

11066.4-1989, this section has the following changes.

- Remove the determination of antimony content relevant content;
- Instrument requirements, sensitivity to the characteristic concentration;
- Will allow the poor to the terms of the precision (repeatability and reproducibility);

1 Scope

GB/T 11066.4-2008 is the Chinese national standard on methods for chemical analysis of gold - determination of copper, lead and bismuth contents - flame 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 9 June 2008 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 December 2008. Classification: ICS 77.150.99, CCS H68. 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 provides the determination of gold in copper, lead and bismuth content. This section applies to gold in copper, lead and bismuth simultaneous determination, which also applies to independent determination of an element. See measurement range Table 1. Table

2 Method summary

Sample decomposition with aqua regia, in 2mol/L HCl medium, separation of gold extracted with ethyl acetate, made after the aqueous phase was concentrated hydrochloric acid (1 + 9) to be Test solution, using air - acetylene flame atomic absorption spectrometer wavelength listed in Table 2, measuring the absorbance of each element. Table

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 hydrochloric acid (rho about 1.19g/mL), pure class distinctions.

3.2 HCl (1 + 1). Hydrochloride 3.3 (1 + 9).

3.4 hydrochloride (Ba (HCl) = 2mol/L).

3.5 nitric acid (rho about 1.42g/mL), pure class distinctions.

3.6 nitric acid (1 + 1). Dilute aqua regia 3.7. 1 to 3 parts of nitric acid and hydrochloric acid and 3 parts of water and mix.

3.8 tartaric acid solution, 500g/L, pure class distinctions.

3.9 washing liquid, pipette 9mL tartaric acid solution (3.8) (3.4) at 300mL of hydrochloric acid, and mix.

3.10 ethyl acetate.

3.11 copper standard stock solution. Weigh 0.5000g metallic copper (Cu mass fraction $\geq 99.95\%$), low-temperature heating nitric acid dissolved in 20mL (3.6) was added 20mL of water, boil rid of oxides of nitrogen, cooled to room temperature, water and transferred to 1000mL volumetric flask and dilute to the mark Degree, and mix. This solution 1mL containing 500 μ g copper.

3.12 lead standard stock solution. Weigh 1.0000g metallic lead (Pb mass fraction $\geq 99.95\%$), low-temperature heating nitric acid dissolved in 20mL (3.6) and boiled rid of oxides of nitrogen, cooled to room temperature, water and transferred to 1000mL volumetric flask and dilute to volume, and mix. This solution 1mL containing 1mg lead.

3.13 Bismuth standard stock solution. Weigh 1.0000g metal bismuth (Bi mass fraction $\geq 99.95\%$), low-temperature heating nitric acid dissolved in 100mL