

ICS 77.120.99

CCS H68



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

GB/T 15072.16-2008

Replacing GB/T 15072.16-1994

**Test method of precious metal alloys - Determination of copper
and manganese contents for gold alloys - Inductively coupled
plasma atomic emission spectrometry**

贵金属合金化学分析方法 金合金中铜和锰量的测定 电感耦合等离子体原子发射
光谱法

Issued on: March 31, 2008

Implemented on: September 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Method summary
- 4 Reagents and materials
- 5 Instruments

Foreword

This standard is GB/T 15072-1994 "precious metals and their alloys -" (all parts) the integration of amendments into Part 19. Determination

--- GB/T 15072.1-2008 Methods for chemical analysis of precious metal alloys of gold, platinum, palladium, gold alloy amount of ferrous sulfate Potentiometric titration;

--- GB/T 15072.2-2008 Methods for chemical analysis of precious metal alloys silver alloys Determination of silver content of sodium chloride potential drop Titration;

--- GB/T 15072.3-2008 Methods for chemical analysis of precious metal alloys of gold, platinum, palladium, platinum alloys determining the amount of potassium permanganate Current titration;

--- GB /15072.4-2008 Methods for chemical analysis of precious metal alloys of palladium, silver-palladium alloy determining the amount of T-dimethyl glyoxal Gravimetric method;

--- GB/T 15072.5-2008 Methods for chemical analysis of precious metal alloys of gold, measuring the potential of potassium iodide palladium alloy of silver content drops Titration;

--- GB/T 15072.6-2008 precious metal alloys - Determination of platinum, palladium, iridium alloy in determining the amount of ferrous sulfate Current titration;

--- GB/T 15072.7-2008 precious metal alloys - Gold alloys chromium and iron content - Inductively coupled plasma Plasma atomic emission spectrometry;

--- GB/T 15072.8-2008 precious metal alloys - gold, palladium, silver and copper alloys - Determination of the amount of precipitation thiourea EDTA complexometric back titration;

--- GB/T 15072.9-2008 precious metal alloys - Gold alloys - Determination of the amount of indium by EDTA back drop Titration;

--- GB/T 15072.10-2008 precious metal alloys - Gold alloys - Determination of nickel by EDTA back drop Titration;

- GB/T 15072.11-2008 precious metal alloys - gold alloy of gadolinium and beryllium content - Inductively coupled plasma Plasma atomic emission spectrometry;
- GB T 15072.12-2008 precious metal alloys - Silver alloys - Determination of vanadium content/hydrogen peroxide spectrophotometer Law degree;
- GB/T 15072.13-2008 precious metal alloys - Tin in silver, cerium and lanthanum content - Inductively coupled Plasma atomic emission spectrometry;

1 Scope

GB/T 15072.16-2008 is the Chinese national standard on test method of precious metal alloys - determination of copper and manganese contents for gold alloys - inductively coupled plasma atomic emission 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 31 March 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 September 2008. Classification: ICS 77.120.99, 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 determination gold alloy of copper and manganese contents. This section applies to AuAgCuGd, AuAgCuMnGd, AuNiCu, AuGeNiCu determination of copper alloy and manganese contents. Determination Fan Wai (mass fraction). 0.5% to 6%.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions of this part. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this section, however, encourage the parties to this part of the research agreement Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this section. 371 precious metal alloys - General rules and regulations YS/T

3 Method summary

Samples with hydrochloric acid - nitric acid mixture is dissolved in hydrochloric acid and precipitation of silver, gold sulfite reducing separation, yttrium is added as an internal standard by inductively coupled Plasma atomic emission spectrometry (hereinafter referred to as ICP-AES) was measured to calculate the mass fraction of copper and manganese.

4 Reagents and materials

Unless otherwise noted, the standard reagents and materials shall comply with the provisions of YS/T 371's.

4.1 Argon ((Ar) $\geq 99.95\%$).

4.2 hydrochloride (rho 1.19g/mL). Nitrate 4.3 (rho 1.42g/mL).

4.4 hydrochloric acid - nitric acid mixture (8 + 1), when using the existing service.

Hydrochloride 4.5 (1 + 9).

4.6 sulfite (to SO₂, at a level of not less than 6%).

4.7 Copper stock standard solution. Accurately weigh 0.1000g copper ((Cu) $\geq 99.99\%$), placed in 200mL beaker. Join 3mL 3mL water and nitric acid (4.3), cover the surface of the pan, heat to dissolve completely boil drive to make nitrogen oxides. Cooled to room temperature, washed with hydrochloric acid (4.5) Transferred to 100mL volumetric flask and dilute to volume. Mix well. 1mL solution containing 1mg of copper.

4.8 Mn stock standard solution. Accurately weigh 0.1000g of manganese metal ((Mn) $\geq 99.99\%$), placed in 200mL beaker. Join 5mL water and 5mL nitric acid (4.3), cover the surface of the pan, heat to dissolve completely boil drive to make nitrogen oxides. Cooled to room temperature, washed with hydrochloric acid (4.5) transferred to 100mL volumetric flask and dilute to volume. Mix well. 1mL solution containing 1mg manganese.

4.9 yttrium stock standard solution. Accurately weigh 0.1270g yttria ((Y₂O₃) $\geq 99.99\%$), placed in 200mL beaker. Added 10mL of hydrochloric acid (4.5), cover the surface of the pan, over low heat until dissolved completely. Cooled to room temperature and transferred to 100mL container with hydrochloric acid (4.5) Volumetric flask and dilute to the mark. Mix well. 1mL solution containing 1mg yttrium.

5 Instruments

ICP-AES instrument. Under optimum working conditions for those who can reach the following indicators can be used.