

ICS 39.060

CCS Y 88



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

GB/T 38145-2019

**High content precious metals jewellery alloys - Determination
of gold, platinum and palladium - Difference method using
inductively coupled plasma optical emission spectroscopy**

Issued on: October 18, 2019

Implemented on: May 1, 2020

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Foreword

1 Scope

2 Normative references

3 Principle

4 reagent materials

4.1 Hydrochloric acid (HCl). The mass fraction is 36% to 38%.

4.2 Nitric acid (HNO₃). The mass fraction is 65%~68%.

5 instruments

5.2 Analytical balance, the graduation value is 0.01mg.

6 sampling

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 21198.4-2007 "Precious metal alloy jewellery - Determination of precious metal content - Part 4

Points. 999 per mille precious metal alloy jewelry precious metal content determination difference subtraction method.

Compared with GB/T 21198.4-2007, the main technical changes of this standard are as follows.

--- Increased the provisions of the sampling method, corresponding to the addition of ISO 11596 in the normative reference documents (see Chapters 2 and 6);

--- Removed hydrochloric acid storage solution and nitric acid storage solution (see 3.7.1 and 3.4.2 of 2007 edition);

--- Increased the corresponding health and safety operating procedures warnings in the test procedure (see Chapter 7);

--- Revised the repeatability to 0.1 per mille (see 8.3, 6.3 of the 2007 edition);

--- Revised Appendix C as a normative appendix (see Appendix C, Appendix A of the 2007 edition).

This standard uses the redrafting method to modify the use of ISO 15093.2015 "jewelry 999 gold, platinum, palladium alloy jewelry precious metal content

Determination of ICP-OES subtraction method.

This standard has more structural adjustments than ISO 15093.2015. This standard and ISO 15093.2015 are listed in Appendix A.

A checklist of chapter number differences.

There are technical differences between this standard and ISO 15093.2015, and the terms involved in these differences have been passed through the margins on their outer side.

The vertical single line (|) is marked. A list of the corresponding technical differences and their causes is given in Appendix B.

This standard also made the following editorial changes.

--- Change the standard name to "Measurement of ICP subtraction of gold, platinum and palladium in high-content precious metal alloys".

--- Removed references to ISO 15093.2015.

This standard was proposed by the China Light Industry Association.

This standard is under the jurisdiction of the National Jewelry Standardization Technical Committee (SAC/TC256).

This standard was drafted. Beijing Guoshou Jewelry Inspection Co., Ltd., National Jewelry Quality Supervision and Inspection Center, Beijing Guoshou Jewelry

Standardization Research Center.

1 Scope

This standard specifies the determination of impurities in high-content precious metal alloy jewellery by inductively coupled plasma optical emission spectroscopy (ICP-OES).

The content of the elemental element determines the gold content in the gold alloy jewelry, the platinum content in the platinum alloy jewelry, and the palladium content in the palladium alloy jewelry.

This standard applies to precious metal alloy jewellery and precious metal alloys with a content of 995.0 per mille~999.9 per mille.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 11596 Sampling of precious metal alloy jewellery and related products
(Jewellery-Sampling of precious metal alloy)

Loops for and in jewellery and associated products)

3 Principle

A sample of the precious metal alloy was weighed and dissolved in aqua regia to prepare a 10 g/L solution. Inductively coupled plasma optical emission spectroscopy (ICP-OES)

The impurity content was measured, and the precious metal content was calculated by subtraction.

4 reagent materials

Unless otherwise stated, only reagents identified as superior grade and secondary water or water of comparable purity were used in the analysis.

4.2 Nitric acid (HNO₃). The mass fraction is 65%~68%.

4.3 Aqueous water. The volume ratio of hydrochloric acid (4.1) to nitric acid (4.2) is 3:1, which is prepared before use.

4.4 Acid storage solution (can contain both hydrochloric acid and nitric acid). all relevant elements in Table C.1, Table C.2 or Table C.3 in Appendix C (respectively

It is 100 mg/L in a medium of 1 mol/L hydrochloric acid (4.1) and 1 mol/L nitric acid (4.2).

Note. Grouping can be based on the stability of the elements in different media.

4.5 Pure precious metals. gold, platinum or palladium with a content of not less than 999.9, the content of each impurity element shall be determined.

5 instruments

5.1 Inductively coupled plasma optical emission spectrometer (ICP-OES). with fixed or scanning channels; wavelength of related elements (see Appendix C)

The resolution is better than 0.02nm, the detection limit is better than 0.05mg/L; with background correction function.

6 sampling

The sampling procedure for the sample is performed in accordance with ISO 11596.