

ICS 39.060

CCS Y 88



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

GB/T 38161-2019

**Palladium jewellery alloys - Determination of palladium -
Inductively coupled plasma (ICP) spectrometric method using
yttrium as internal standard element**

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%.

4.4 Barium chloride hexahydrate (YCl₃·6H₂O).

4.5 Yttrium oxide (Y₂O₃).

5 instruments

5.2 Analytical balance, the graduation value is 0.01mg.

Foreword

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

This standard replaces GB/T 21198.3-2007 "Precious metal alloy jewellery - Determination of precious metal content - Part 3

Points. Palladium alloy jewelry palladium content was determined using ? as the internal standard.

Compared with GB/T 21198.3-2007, the main technical changes of this standard are as follows.

--- Revised the scope of application is "palladium content of 500 per mille ~ 990 per mille" (see Chapter 1, Chapter 1 of the.2007 edition);

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

--- Added the content of the direct preparation of the calibration test solution and the sample test solution and the calculation method of the results (see 7.2.3, 7.3.2 and 7.6.4).

This standard uses the redrafting method to modify the use of ISO 11495.2014 "jewelry palladium alloy jewelry in the determination of palladium content

The standard uses ICP spectroscopy.

This standard has more structural adjustments than ISO 11495:2014. This standard and ISO 11495:2014 are listed in Appendix A.

A checklist of chapter number differences.

There are technical differences between this standard and ISO 11495:2014, and the terms involved in these differences have been passed through the margins on the outer side of the page.

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 "Palladium Alloy Jewelry Palladium Content Determination ? Internal Standard ICP Spectroscopy".

--- Removed references to ISO 11495:2014.

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 method for determining the palladium content in palladium alloy jewellery by ICP-OES spectroscopy using ? as the internal standard.

This standard is applicable to palladium alloy jewellery and palladium alloy products with palladium content of 500 per mille~990 per mille. Other palladium alloys with palladium content can be referred to.

use.

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
(Jewelery-Samplingofpreciousmetalal-

Loysforandinjeweleryandassociatedproducts)

3 Principle

Accurately weigh the sample and dissolve it in aqua regia to form a sample solution of the exact mass. Accurately weigh a certain amount of sample solution, and internal standard solution

Mix and calibrate to standard measurement volume.

Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-OES) was used to test sample solutions and calibration solutions using insertion methods (containing known masses)

The amount of palladium and rhodium solution) is the strength of palladium (recommended wavelength 340.45 nm) and ruthenium (recommended wavelength 371.03 nm). Palladium and rhodium in the sample solution

The intensity ratio is compared with the ratio of the strength of palladium and rhodium in the standard solution to calculate the palladium content.

When using other wavelengths of palladium, check the effects of interference and instrument performance.

4 reagent materials

Unless otherwise stated, only analytically pure reagents and secondary water or equivalent purity water were used in the analysis.

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

4.3 Palladium. The palladium content is not less than 999.9 per mille. Correction should be made when using 999.5 Å palladium.

4.5 Yttrium oxide (Y₂O₃).

4.6 Wangshui. The volume ratio of hydrochloric acid (4.1) to nitric acid (4.2) is 3.1, and it is prepared before use.

5 instruments

5.1 Inductively coupled plasma optical emission spectrometer (ICP-OES). Simultaneous determination of palladium emission line 340.45nm and internal standard ? emission line

With an intensity of 371.03 nm, the wavelength resolution of the relevant elements is better than 0.02 nm.