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

GB/T 21198.4-2007

**Determination of precious metals in precious metals jewellery alloys -- Method
using ICP spectrometry -- Part 4: 999‰ precious metals jewellery alloys --
Determination of precious metals -- Difference method**

贵金属合金首饰中贵金属含量的测定 ICP光谱法 第4部分：999‰贵金属合金首饰
贵金属含量的测定 差减法

(English Translation)

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Table of Contents

- Foreword
- 1 Scope
- 2 Principle of the method
- 3 Reagent material
- 4 Instrument

Foreword

GB/T 21198 "precious metal jewelry alloys precious metal content using ICP spectrometry" is divided into six parts.

- Part 1. Determination of platinum content platinum jewelry alloys using yttrium as internal standard;
- Part 2. Determination of platinum content platinum alloy jewelry using platinum all trace elements and the intensity ratio method;
- Part 3. Determination of palladium jewelry alloys using palladium content of yttrium as internal standard;
- Part 4. Determination of 999 per mille precious metal jewelry alloys precious metal content of subtraction;
- Part --- Article 5. 999 per mille silver jewelry alloys - Determination of silver content difference of subtraction;
- Part 6. Subtraction.

This section GB/T Part of 421,198.

The section referring to ISO/CD15093.2001 "999 per mille precious metal precious metal jewelry alloys Determination ICP-OES Subtraction" Write, there are mainly ISO/CD15093 the following technical differences.

- Due to the current international and domestic no standard for sample preparation, thus deleting the original text of Chapter 2, b Chapter 4 and Chapter 9);
- According to our standard requirements for the preparation of reagents specifications made provisions;
- Increased provisions for analytical balance.

For ease of use, this section also made the following editorial changes.

--- "This International Standard" be replaced by "this section";

"," --- With a decimal point instead of a comma as the decimal point, "";

--- With "mL" instead of "cm³";

--- Delete international standards foreword.

Appendix A of this section is an informative annex.

This part is proposed by the China National Light Industry Council.

This part of the National Standardization Technical Committee jewelry (SAC/TC256) centralized.

This section drafted by. National Jewelry Quality Supervision and Inspection Center.

1 Scope

This section GB/T 21198 requirements by measuring 999 per mille precious metal jewelry alloys to determine the content of impurity elements platinum alloy Jewelry in platinum content, palladium jewelry alloys of palladium content, method of gold content of gold jewelry alloys.

This section applies to an amount of 999 per mille precious metal jewelry alloys.

Note: The jewelry may contain platinum, palladium, gold, silver, bismuth, cadmium, cobalt, copper, iron, iridium, nickel, lead, rhodium, ruthenium, tin, titanium and zinc.

2 Principle of the method

Weigh precious metal alloy sample was dissolved in aqua regia, 10g/L solution was prepared. Determination of impurities content by ICP spectrometer to determine your use subtraction Metal content.

3 Reagent material

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

3.1

Hydrochloride. mass fraction of 36% ~ 38%, $\rho = 1.19\text{g/mL}$.

3.2

nitric acid. mass fraction of 65% ~ 68%, $\rho = 1.40\text{g/mL}$.

3.3

aqua regia (preparation before use). 1 volume of nitric acid (3.2) and three volumes of hydrochloric acid (3.1) and mixed.

3.4

using a validated reagents to obtain an indication of the concentration, following the preparation of a mixed stock solution.

3.4.1

nitrate stock solution (chloride free). silver, bismuth, lead (respectively 100mg/L), in 2mol/L nitric acid (3.2) medium.

3.4.2

hydrochloride stock solution (containing no nitrate). tin, titanium (respectively 100mg/L), in 2mol/L hydrochloric acid (3.1) medium.

3.4.3

acid stock solution (can contain hydrochloric acid and nitric acid). contain related elements (respectively 100mg/L), in 1mol/L hydrochloric acid (3.1) and 1mol/L nitrate (3.2) media.

NOTE: In addition to the solution 3.4.3, but can be added to any element required in 3.4.1 or 3.4.2 solution, the condition is not to introduce chloride in 3.4.1, nor to introduce nitrate 3.4.2.

3.5

noble metal wire or sheet. purity of not less than 999.9 per mille, it should determine the content of each impurity element.

4 Instrument

Conventional laboratory instruments and equipment following

4.1

Inductively coupled plasma atomic emission spectroscopy (ICP Spectrometer). with fixed or scanning channels, optical resolution of related elements 0.02nm, the detection limit is not less than 0.05mg/L, with a background correction.

The detector was a photomultiplier tube or a semiconductor chip (CID, CCD) can be used to analyze the instrument.

NOTE: Appendix A is recommended wavelength.

4.2

microbalance. a sense of the amount of 0.01mg.