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**NONFERROUS METALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YS/T 938.1-2013

**Chemical analysis methods of gold alloys and palladium alloys
for dental ceramic restoration. Part 1: Determination of gold
content. Gravimetry by sodium nitrite reduction
(English Translation)**

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Table of Contents

- Foreword
- 1 Scope
- 2 Method summary
- 3 Reagents
- 4 Instrument
- 5 Sample

Foreword

YS/T 938 "dental gold PFM group and palladium-based alloy chemical analysis method" is divided into four parts.

- Part 1. determination of gold by weight of sodium nitrite reduction method;
- Part 2. Determination of the amount of palladium dimethylglyoxime gravimetric method;
- Part 3. Determination of the amount of silver by flame atomic absorption spectrometry and potentiometric titration;
- Part 4. Inductively coupled plasma atomic gold, platinum, palladium, copper, tin, indium, zinc, gallium, beryllium, iron, manganese, lithium amount of emitted light Spectroscopy.

This section YS/T 938 - Part 1.

This section drafted in accordance with GB/T 1.1-2009 given rules.

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) centralized.

This section is responsible for drafting unit. Beijing Nonferrous Metal Research Institute, China Nonferrous Metals Industry Institute of Standards and Metrology and Quality.

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1 Scope

This section YS/T 938 provides for dental porcelain repair method for measuring the amount of gold and gold-based palladium-based alloys.

This section applies to dental porcelain restoration with gold base and palladium based alloys in the gold content determination. Measurement range. 15.00% - 90.00%.

2 Method summary

Mixing the sample with hydrochloric acid, nitric acid dissolved. In addition after precipitation with silver chloride, silver in dilute hydrochloric acid solution with sodium nitrite reduction precipitation sponge Gold, burning, constant weight, and inductively coupled plasma atomic emission spectrometer makeup gold remaining in the filtrate quality to precipitate gold and sponge Filtrate quality of the residual gold and calculate the gold content.

3 Reagents

Unless otherwise specified, the reagents were analytical reagent solution preparation and analysis are secondary distilled water or equivalent purity test Room with water.

3.1

hydrochloric acid ($\rho = 1.19\text{g/mL}$).

3.2

nitric acid ($\rho = 1.42\text{g/mL}$).

3.3

mixed acid. hydrochloric acid (3.1) and nitrate (3.2) in a volume ratio 40:7 mixed preparation.

3.4

hydrochloride (199).

3.5

hydrochloride (11).

3.6

sodium nitrite solution (250g/L).

3.7

gold standard stock solution. Weigh 0.1000g Gold ($w_{\text{Au}} \geq 99.99\%$), placed in 100mL beaker, add 1mL of nitric acid (3.2) and 3mL hydrochloric acid (3.1), heated until completely dissolved and evaporated to near dryness, remove the coolish, adding 10mL hydrochloric acid (3.5), boiled to drive the best nitrogen oxide Objects, remove the cooled and transferred to 100mL volumetric flask with water to volume, and mix. This solution 1mL containing 1000 μg gold.

3.8

gold standard solution. Pipette 10.00mL gold standard stock solution (3.7), placed in 100mL flask, add 10mL hydrochloric acid (3.5) with water to volume, and mix. This solution 1mL containing 100 μ g gold.

4 Instrument

Inductively coupled plasma atomic emission spectrometer.

--- Under optimum working conditions, with the gold standard solution 1.0 μ g/mL measured 11 times, and the relative standard deviation of light intensity does not More than 2.5%;

--- Optimal wavelength alloying elements recommended for 267.575nm.

5 Sample

Sample (sheet) is processed into crushed particles with acetone to remove oil, washed with water, dried and mixed.