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

YS/T 1120.3-2016

**Methods for chemical analysis of gold-tin alloys. Part 3: Determination
of iron, copper, silver, lead, palladium, cadmium, zinc content.
Inductively coupled plasma atomic emission spectrometry**

金锡合金化学分析方法 第3部分：铁、铜、银、铅、钯、镉、锌量的测定 电感耦合等离子体原子发射光谱法

(English Translation)

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Foreword

YS/T 1120 "gold and tin alloy chemical analysis method" is divided into the following three parts;

- Part 1. Determination of gold quantity - Fire test method;
- Part 2. Determination of tin content - Fluoride precipitation EDTA complexometric titration;
- Part 3. Determination of iron, copper, silver, lead, palladium, cadmium and zinc - Inductively coupled plasma atomic emission spectrometric method.

This section is part 3 of YS/T 1120.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part of the National Nonferrous Metals Standardization Technical Committee (SAC/TC243) proposed and centralized.

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Metallographic analysis of gold alloy Part 3. determination of iron, copper, silver, lead, palladium, cadmium and zinc Inductively coupled plasma atomic emission spectrometry

1 Scope

This part of YS/T 1120 specifies the determination of iron, copper, silver, lead, palladium, cadmium and zinc in gold and tin alloys.

This part is applicable to the determination of iron, copper, silver, lead, palladium, cadmium and zinc in gold and tin alloy. The measurement range is shown in Table 1.

Table 1 Measurement range

Element determination range /%	element determination range /%
Iron 0.001 ~ 0.1	Copper 0.001 ~ 0.1
Silver 0.001 to 0.1	Lead 0.001 ~ 0.1
Palladium 0.001 to 0.1	Cadmium 0.001 ~ 0.1
Zinc 0.001 to 0.1	- -

2 Method summary

The samples were determined by hydrochloric acid, nitric acid, and inductively coupled plasma atomic emission spectrometry. The contents of iron, copper, silver, lead, palladium, cadmium and zinc were calculated.

Volume fraction.

3 Reagents and materials

The laboratory uses water as a water.

3.1

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

3.2

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

3.3

Hydrochloric acid (1:4).

3.4

iron standard storage solution. Weigh 0.1000g metal iron powder (mass fraction $\geq 99.99\%$), placed in 100mL quartz beaker, add 3mL hydrochloric acid (3.2), dissolved in low temperature heating completely, into the 100mL volumetric flask, add 10mL hydrochloric acid (3.2), diluted with water to the mark. mix uniform. This solution contains 1 mL of 1.0 mg of iron.

3.5

copper standard storage solution. Weigh 0.1000g metal copper (mass fraction $\geq 99.99\%$), placed in 100mL quartz beaker, add 2mL nitric acid (3.1), dissolved in low temperature

heating completely, into the 100mL volumetric flask, add 10mL hydrochloric acid (3.2), diluted with water to the mark.

Mix well. This solution contains 1 mL of 1.0 mg of copper.

3.6

silver standard storage solution. Weigh 0.1000g metal silver (mass fraction $\geq 99.99\%$), placed in 100mL quartz beaker, add 2mL nitric acid (3.1), dissolved in low temperature heating completely, into the 100mL volumetric flask, add 70mL hydrochloric acid (3.2), diluted with water to the mark.

Mix well. This solution contains 1 mL of 1.0 mg of silver.

3.7

lead standard storage solution. Weigh 0.1000g metal lead (mass fraction $\geq 99.99\%$), placed in 100mL quartz beaker, add 3mL nitric acid (3.1), dissolved in low temperature heating completely, into the 100mL volumetric flask, add 10mL hydrochloric acid (3.2), diluted with water to the mark.