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YS

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

YS/T 53.1-2010

Replacing YS/T 53.1-1992

**Methods for chemical analysis of copper, lead, zinc original and
tailing ores. Part 1: Determination of gold content. Fire
assay-flame atomic absorption spectrometric**

铜、铅、锌原矿和尾矿化学分析方法 第1部分：金量的测定火试金富集-火焰原子
吸收光谱法

(English Translation)

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Table of Contents

- Foreword
- 1 Scope
- 2 Method summary
- 3 Reagents
- 4 Instruments and equipment

Foreword

YS/T 53 "Copper, lead, zinc ore tailings and chemical analysis method" is divided into three parts.

- Part 1. Determination of the amount of gold fire assay enrichment - flame atomic absorption spectrometry;
- Part 2. determination of gold by Flow Injection Micro - column separation -8531 fiber enrichment - flame atomic absorption spectrometry;
- Part 3. Determination of the amount of silver by flame atomic absorption spectrometry.

This is Part 1.

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

The partial replacement of YS/T 53.1-1992, this portion of YS/T 53.1-1992 compared to the main changes are as follows.

- Deleted TMK spectrophotometry;
- Measured by the scope of 0.001g/t ~ 1.0g/t adjusted to 0.05g/t ~ 3.0g/t;
- Omitted "reference standard" one;
- Text format has been modified;
- Complements the precision, quality assurance and control provisions.

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

This section is drafted. Shuikoushan Hunan Nonferrous Metals Group Co., Ltd., Guangzhou Nonferrous Metal Research Institute, Beijing Mining and Metallurgy Research General Hospital.

Participated in the drafting of this section. Tongling Nonferrous Metals Group Holdings

Limited, Daye Nonferrous Metals Co., Ltd., Henan Yuguang Gold & Lead Unit Limited copies.

1 Scope

YS/T of the provisions of section 53 of the copper, lead and zinc ore tailings and determination of gold content.

This section applies to copper, lead, zinc ore tailings and determination of gold content. Measuring range. 0.05g/t ~ 3.00g/t.

2 Method summary

Sample obtained by melting lead button ingredients containing precious metals, gold and silver together and then get blown ash particle. Together with the amount of grain mixed acid dissolved, the original flame Absorption spectrometric method for the determination of gold content.

3 Reagents

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

3.1

sodium carbonate, commercially pure.

3.2

lead oxide, gold content is not more than 0.004g/t.

3.3

silica, commercially pure.

3.4

borax, commercially pure.

3.5

potassium nitrate, commercially pure.

3.6

starch, chemically pure.

3.7

sodium chloride, commercially pure.

Nitrate 3.8 (rho1.42g/mL).

3.9

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

3.10

mixed acid. volume ratio, taking one part of nitric acid (3.8) plus 3 parts of hydrochloric acid (3.9) and mix. Using now.

3.11

silver nitrate solution. Weigh 1.0g of silver ($\geq 99.99\%$), placed in 300mL beaker, add 20mL of nitric acid (3.8), low-temperature heating solution Until complete solution, cooled to room temperature, transferred to 1000mL volumetric flask with 20mL of nitric acid (3.8) beaker was washed 5 times washings were combined and the capacity Bottle, diluted with water to volume, and mix. 1mL solution containing 1mg silver.

3.12

gold standard stock solution. Weigh 0.0500g Gold ($\geq 99.99\%$), a 50mL beaker, add 20mL mixed acid (3.10) Low Temperature and dissolved by heating, cooled to room temperature. Transferred to 500mL volumetric flask, mixed acid in 20mL (3.10) washing the beaker, then washed with water several times, together and in the volumetric flask, dilute with water to volume, and mix. This solution 1mL containing 100 μg gold.

3.13

gold standard solution. Pipette 25.00mL gold standard stock solution (3.12), placed in 100mL volumetric flask, add 10mL mixed acid (3.10), diluted with water to volume, and mix. This solution 1mL containing 25 μg gold.

4 Instruments and equipment

4.1

Assaying crucible. Made of refractory clay (reference dimensions. height 140mm, top outside diameter 90mm, bottom outside diameter 50mm).