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YS

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

YS/T 569.2-2015

Replacing YS/T 569.2-2006

**Methods for chemical analysis of thallium. Part 2: Determination
of iron content. Phenanthrolin spectrophotometry**

铊化学分析方法 第2部分：铁量的测定 邻菲啰啉分光光度法

(English Translation)

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Table of Contents

- Foreword
- 1 Scope
- 2 Method summary
- 3 Reagents
- 4 Instrument
- 5 Step, Analysis
- 5.1 Sample

Foreword

YS/T 569 "thallium chemical analysis method" is divided into 10 parts.

- Part 1. Determination of copper content copper reagent chloroform extraction spectrophotometry;
- Part 2. Determination of iron content - Phenanthroline spectrophotometric method;
- Part 3. Determination of mercury content of Diphenylthiocarbazone extraction spectrophotometry;
- Part 4. Determination of zinc content of benzene extraction dithizone spectrophotometry;
- Part 5. Determination of cadmium content of benzene extraction dithizone spectrophotometry;
- Part 6. Determination of lead content of benzene extraction dithizone spectrophotometry;
- Part 7. Determination of the amount of chrome aluminum Azure S Spectrophotometry;
- Part 8. Determination of indium content of crystal violet benzene extraction spectrophotometry;
- Part 9. Determination of the amount of silicon molybdenum blue isoamyl alcohol extraction spectrophotometric method;
- Part 10. Determination of the amount of thallium Na₂EDTA titration.

This section YS/T 569 Part 2.

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

The partial replacement of YS/T 569.2-2006 "Thallium - Determination of iron content (o-phen coffee absorptiometry)" (the original GB 2592.2-1981).

This portion of YS/T 569.2-2006 compared to the main changes are as follows.

--- Text format has been modified;

--- Increased test reporting requirements.

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

This section is drafted. Hunan Nonferrous Metal Research Institute, Hunan Nonferrous Metals Group Co., Ltd. Shuikoushan, Entry-Exit Inspection and Fangchenggang Quarantine Bureau, Beijing Mining Research Institute, Zhuzhou Smelter Group Co., Ltd.

1 Scope

YS/T 569 This part provides for determination of thallium in iron content.

This section applies to the determination of thallium in iron content. Measurement range. 0.0005% to 0.015%.

2 Method summary

Sample dissolved in nitric acid, acetic acid at pH 3.7 - sodium acetate medium, divalent iron and phenanthroline generate water-soluble complex of red Material, a spectrophotometer at a wavelength of 510nm measured absorbance.

3 Reagents

3.1

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

3.2

nitric acid (11), high-purity.

3.3

Ammonia (12), high purity.

3.4

ascorbic acid solution (10g/L), the time is now equipped with.

3.5

acetic acid (0.6mol/L).

3.6

sodium acetate solution (2mol/L).

3.7

acetic acid - sodium acetate buffer (pH value 3.7). Pipette 27mL acetic acid solution (3.5), and 3mL of sodium acetate solution (3.6) were mixed, Diluted with water to 100mL, shake.

3.8

phenanthroline solution (2g/L). Weigh 0.2g phen, was dissolved in 20mL of anhydrous ethanol, dilute with water to 100mL, shake.

3.9

iron standard stock solution. Weigh 0.1000g metallic iron ($w_{Fe} \geq 99.99\%$) placed in 100mL beaker, add 5mL nitrate Acid (3.2), heat gently to dissolve, was added 25mL of water, heated to boiling, cooled and transferred to 1000mL volumetric flask, add 10mL of nitric acid (3.1), Diluted with water to the mark. This solution 1mL iron 100 μ g.

3.10

Iron standard solution. Pipette 5.00mL iron standard stock solution (3.9) in 100mL volumetric flask, dilute to the mark, shake, this Solution 1mL iron 5 μ g.

4 Instrument

Spectrophotometer.

5.1 Sample

Table 1. Weigh the sample to the nearest 0.0001g.