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

YS/T 569.1-2015

Replacing YS/T 569.1-2006

**Methods for chemical analysis of thallium. Part 1: Determination
of copper content. Cupferron chloroform extraction
spectrophotometry**

铊化学分析方法 第1部分：铜量的测定 铜试剂三氯甲烷萃取分光光度法
(English Translation)

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Table of Contents

Foreword
1 Scope
2 Method summary
3 Reagents
4 Instrument

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 1.

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

The partial replacement of YS/T 569.1-2006 "Thallium - Determination of copper content (Cu chloroform extraction reagent photometric method)" (formerly GB 2592.1-1981). This portion of YS/T 569.1-2006 compared to the main changes are as follows.

- Text format has been modified;
- Complements the purification method of ammonium citrate;
- Increased test reporting requirements.

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

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1 Scope

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

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

2 Method summary

Sample dissolved in nitric acid, ammonium citrate medium at a pH of 9 to 10, copper and copper reagent to generate a yellow-brown complex in a spectrophotometer Meter measuring the absorbance at a wavelength of 440nm.

3 Reagents

3.1

CTC.

3.2

chloroform.

Aqueous ammonia 3.3 ($\rho = 0.90\text{g/mL}$).

3.4

nitric acid (11).

3.5

Copper reagent (2g/L).

3.6

Sodium sulfite (200g/L).

3.7

phenolphthalein ethanol solution (1g/L).

3.8

pairs Diphenylthiocarbazone solution (0.05g/L). Weigh 0.25g dithizone added 200mL of carbon tetrachloride (3.1) dissolved, Rapidly the amount of filter paper in a brown bottle. Pipette the solution 4mL placed in a brown bottle, was added 96mL of carbon tetrachloride (3.1) and shake.

3.9

ammonium citrate solution (500g/L). Weigh 50g sodium citrate, placed in 200mL beaker, dissolved in water, diluted to 100mL, using Ammonia (3.3) and neutralized to pH8 ~ 9, moved into the 500mL separating funnel, add 20mL Diphenylthiocarbazone solution (3.8), shaking 1min, standing stratification, discard the organic phase, repeat the above steps until the organic phase was extracted a pale green. The aqueous phase with carbon tetrachloride (3.1) the organic phase was washed to repeated oscillation colorless far moved 100mL flask, constant volume backup.

3.10

Copper Standard Solution Storage solution. Weigh 0.5000g copper ($w_{Cu} \geq 99.99\%$) into 200mL beaker, add 10mL nitrate Acid (3.4), heated to dissolve, add a small amount of water, heated to boiling, in time to make oxides of nitrogen, cooled and transferred to 1000mL volumetric flask, diluted with water to the mark, shake, and this solution 1mL copper 500 μ g.

3.11

Copper standard solution. Pipette 5.00mL copper standard solution (3.10) into 500mL volumetric flask, dilute to the mark, shake. this 1mL solution containing copper 5 μ g.

4 Instrument

Spectrophotometer.