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

YS/T 569.3-2015

Replacing YS/T 569.3-2006

**Methods for chemical analysis of thallium. Part 3: Determination
of mercury content. Dithizone carbon tetrachloride extraction
spectrophotometry**

铊化学分析方法 第3部分：汞量的测定双硫脲四氯化碳萃取分光光度法
(English Translation)

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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 3.

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

The partial replacement of YS/T 569.3-2006 "Thallium - Determination of the amount of mercury (Diphenylthiocarbazone extraction photometric method)" (formerly GB 2592.3-1981). This portion of YS/T 569.3-2006 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.

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1 Scope

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

This section applies to the determination of thallium in mercury content. Measurement range. 0.0005% to 0.025%.

2 Method summary

Sample dissolved in nitric acid at pH 4-5 sodium acetate solution with dithizone mercury generated orange complexes may be tetrachloride Washed carbon extraction, excess dithizone removed with dilute sodium hydroxide solution, measuring absorbance at 490nm wavelength spectrophotometer.

3 Reagents

3.1

CTC.

3.2

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

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

3.4

nitric acid (11).

3.5

Aqueous ammonia (11).

3.6

sodium sulfite solution (200g/L). the time is now equipped with.

3.7

EDTA solution (200g/L). Weigh 20gEDTA, ammonia was added 17mL (3.3), dissolved in water and diluted to 100mL, Shake well.

3.8

bromophenol blue ethanol solution (1g/L).

3.9

sodium acetate buffer solution (pH value of 4.7 to 5). Weigh 40g of sodium acetate, dissolved in water was added 200mL, 7mL added nitric acid (3.2) Diluted with water to 400mL, shake.

3.10

Sodium chloride - hydrochloric acid lotion. Mix 200g L NaCl solution by volume and 0.03mol/L hydrochloric acid and the like.

3.11

EDTA-NaOH lotion. The 1gEDTA dissolved in 100mL sodium hydroxide solution (4g/L) of.

3.12

pairs Diphenylthiocarbazone solution (0.05g/L). Weigh 0.25g of purified dithizone was added 100mL of carbon tetrachloride dissolved done Filtered in a brown bottle and shake. Pipette the solution 2mL, placed in a brown bottle, add 98mL of carbon tetrachloride, shake with a time now equipped.

Dithizone purification. Weigh 1g dithizone dissolved in 100mL of chloroform, and the solution was filtered in a separating funnel with 100mL ~ 200mL dilute ammonia (199) oscillation 1min ~ 2min, after standing layer, the aqueous phase was transferred to a beaker, the above operation is repeated 2 to 4 times. water box merge. After filtration cotton, acidified with hydrochloric acid to precipitate completely dithizone, sand core crucible with suction, washed with water 3 to 4 times, in dithizone 40 °C after drying in a dryer stored.

3.13

Mercury standard stock solution. Weigh 0.5000g mercury ($w_{\text{Hg}} \geq 99.95\%$) into 300mL beaker, add 10mL of nitric acid (3.4), Low-temperature heating dissolved by adding 10mL water, remove the cooled and transferred to 1000mL volumetric flask, dilute with water to the mark. This solution 1mL mercury-containing 500 μg .

3.14

Mercury standard solution. Pipette 5.00mL mercury standard stock solution (3.13) was placed in 500mL volumetric flask, add 2mL nitric acid (3.4),