

ICS 77.120.99
CCS H 14

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

YS/T 569.9-2015

Replacing YS/T 569.9-2006

**Methods for chemical analysis of thallium. Part 9: Determination
of silicon content. Isoamyl alcohol extraction silicon
molybdenum blue spectrophotometry**

铊化学分析方法 第9部分：硅量的测定 硅钼蓝异戊醇萃取分光光度法
(English Translation)

Issued on: April 30, 2015

Implemented on: October 1, 2015

Issued by: Ministry of Industry and Information Technology

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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 9.

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

The partial replacement of YS/T 569.9-2006 "Determination of silicon content of thallium (isoamyl alcohol extraction molybdenum blue photometric method)" (formerly GB 2592.9-1981). This portion of YS/T 569.9-2006 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 silicon content.

This section applies to the determination of the amount of thallium in silicon. Measurement range. 0.0002% to 0.0015%.

2 Method summary

After the sample is dissolved in nitric acid, hydrofluoric acid is dissolved with acid insoluble silica, boric acid complex fluorine, at a pH of 2.5 to 3.5 pH, silicon and molybdenum Ammonium generation silicon molybdenum heteropoly acid is isoamyl alcohol extraction in sulfuric acid, sulfuric acid diamide - stannous chloride reduction of silicon molybdenum blue at spectrophotometric Total 630nm wavelength measured absorbance.

3 Reagents

3.1

nitric acid (11), high-purity.

3.2

nitric acid (116), high-purity.

3.3

Hydrofluoric acid ($\rho = 1.15\text{g/mL}$), ultra-pure.

3.4

sulfuric acid (12), high purity.

3.5

sulfuric acid bath. 100mL amount of sulfuric acid (19) in the 125mL separating funnel with 20mL isoamyl alcohol extraction 2min, when used Now equipped.

3.6

saturated solution of boric acid, pure class distinctions.

3.7

Sodium hydroxide solution. 100g/L, pure class distinctions.

3.8

sodium sulfite solution. 20g/L, with a preparation time.

3.9

saturated solution of urea.

3.10

ammonium molybdate solution (120g/L). Weigh excellent pure ammonium molybdate $[(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}]$, dissolved in 60 °C ~ 80 °C hot water After filtration in a plastic bottle.

3.11

citric acid solution (300g/L).

3.12

tartaric acid solution (200g/L).

3.13

hydrazine sulfate solution (5g/L). formulated with sulfuric acid (136).

3.14

stannous chloride solution (100g/L). formulated with hydrochloric acid (11).

3.15

reductant. hydrazine sulfate solution (3.13) and stannous chloride solution (3.14) to 25.1 proportion shake, with the time is now equipped.

3.16

isoamyl alcohol.

3.17

ethanol.

3.18

Silicon Storage standard solution. Weigh 0.2139g pre-ignition at 1000 °C 1h and cooled to room temperature, silica ($w\text{SiO}_2 \geq 99.99\%$) in a platinum crucible, 5g of anhydrous sodium carbonate (excellent pure), shaken at 400 °C ~ 500 °C dehydrated completely, placed in 1000 °C after capping horse Muffle furnace melt 10min ~ 20min, removed, and cooled.

Moved Teflon beaker, with boiling water leaching, wash the crucible and the crucible cover, plus