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

YS/T 520.7-2007

Replacing YS/T 520.7-2006

**Chemical analysis of gallium. Part 7: Determination of silicon
content. The extraction-molybdenum blue spectrophotometric
method**

镓化学分析方法 第7部分：硅含量的测定萃取-钼蓝分光光度法

(English Translation)

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Foreword

YS/T 520-2007 "Chemical analysis of gallium" Is the YS/T 520-2006 (formerly GB/T 4375-1984) amendments, divided into Part 12.

--- Part 1. Determination of copper content of 2,9-dimethyl-4,7-diphenyl-1,10-phenanthroline spectrophotometry

--- Part 2. Determination of lead content of 4- (2-pyridyl) - resorcinol spectrophotometry

--- Part 3. Determination of aluminum content Chromazurol S- tetradecyl pyridine bromide spectrophotometric method

--- Part 4. Determination of iron content of 4,7-diphenyl-1,10-phenanthroline spectrophotometry

--- Part 5. Determination of calcium content nitrous oxide - acetylene flame atomic absorption spectrometry

--- Part 6. Determination of tin content salicylfluorone - cetyl trimethyl ammonium bromide, spectrophotometry

--- Part 7. Determination of silicon content extraction - molybdenum blue spectrophotometric method

--- Part 8. Determination of indium content of ethyl violet spectrophotometry

--- Part 9. Determination of germanium content Phenylfluorone - polyethylene glycol octyl phenyl ether extraction spectrophotometric method

--- Part 10. Determination of zinc content atomic absorption spectrometry

--- Part 11. Determination of mercury content of the cold atomic absorption spectrometry

--- Part 12. lead, copper, nickel, aluminum, indium and zinc Determination of chemical spectroscopy this is Part 7.

The partial replacement of YS/T 520.7-2006 (formerly GB/T 4375.7-1984).

This part is YS/T 520.7-2006 "Chemical analysis of gallium - Part 7. Determination of silicon content extraction - molybdenum blue spectrophotometric Law "editorial finishing.

The non-ferrous metal part by the National Standardization Technical Committee and centralized.

This standard by the Aluminum Corporation of China Shandong branch responsible for drafting.

Drafters of this section. Chen Jianli, Ho Ying ceremony, Sun Guo, Zhao Shali.

The non-ferrous metal part by the National Standardization Technical Committee responsible for the interpretation.

This part of the standard replaces the previous editions are.

--- YS/T 520.7-2006 (formerly GB/T 4375.7-1984).

Chemical analysis of gallium Part 7. Determination of silicon content Extraction - molybdenum blue spectrophotometric method

1 Scope

This section provides the determination of gallium in silicon content.

This section applies to the determination of gallium in silicon content. Measurement range.
~ 0.00005% 0.00060%.

2 Method summary

Samples with hydrochloric acid dissolved in 0.4mol/L hydrochloric acid, acidity, silicon and ammonium molybdate forming Si - Mo heteropoly acid. Tartaric acid may be present in order to eliminate in phosphorus, arsenic interference, using 1-amino-2-naphthol 4-sulfonic acid will be reduced to silicon molybdenum yellow and molybdenum blue. In amyl alcohol extracted wavelength spectrophotometer 800nm measured absorbance.

3.1 Hydrochloric acid (6mol/L). with hydrochloric acid (rho1.19g/cm

3) by sub-boiling distillation purified preparation.

3.2 hydrochloride (3mol/L). formulated with hydrochloric acid (3.1).

3.3 sulfate (1 + 1).

3.4 n-amyl alcohol. 137 °C ~ 139 °C purified by distillation. Before using 1.45mol/L sulfuric acid [100mL reducing agent solution containing 3mL (3.8)] saturated.

3.5 potassium permanganate solution (1g/L).

3.6 ammonium molybdate solution (100g/L), high purity.

3.7 tartaric acid solution (200g/L), high purity.

3.8 reducing agent solution (2g/L). Weigh 0.2g 1-amino-2-naphthol-4-sulfonic acid, dissolved in 100mL sodium sulfite solution (40g/L) of.

3.9 Deionized water. conductivity greater than 10S/m.

3.10 base solution. Weigh 3.0000g gallium (high purity) in three aliquots platinum crucible, hydrochloric acid were added 7.5mL ~ 8.0mL (3.1), covered with a platinum lid, after dissolved by heating at 75 °C ~ 80 °C, evaporated to a volume of 1/2 of the original volume when removed, the solution was cooled combined, washed with water Diluted to 60mL, and mix. 1mL solution containing 0.05g of gallium.

3.11 Silicon Storage standard solution. Weigh 2.139g spectrum pure silica [(SiO₂ ≥ 99.99%)], placed in a platinum crucible, was added 10g Mixed flux of sodium carbonate and potassium carbonate (2 + 1), and mix in the blowtorch to melt the solution is clear, and then burning 10min, after cooling with hot water Out, the solution was heated to clarify. Cooled and transferred to 1000mL volumetric flask, dilute to the mark, mix and immediately transferred to a plastic bottle. This solution 1mL 1.0mg solution containing silicon.

3.12 Silicon standard solution. Pipette 25.00mL silicon standard stock solution (3.11), placed in 250mL volumetric flask, dilute to the mark, Mix well. Immediately transferred to plastic bottles. This solution 1mL containing 100μg silicon.

3.13 Silicon standard solution. Pipette 5.00mL silicon standard solution (3.12) into 100mL volumetric flask, dilute with water to volume, and mix.

Immediately transferred to plastic bottles. This solution 1mL containing 5μg silicon.

4 Instrument

4.1

Spectrophotometer.

4.2

a platinum crucible.