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

YS/T 520.5-2007

Replacing YS/T 520.5-2006

**Chemical analysis of gallium. Part 5: Determination of calcium
content. The N₂O-C₂H₂ flame atomic absorption spectral
method**

镓化学分析方法 第5部分：钙含量的测定一氧化二氮-乙炔火焰原子吸收光谱法
(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 5.

The partial replacement of YS/T 520.5-2006 (formerly GB/T 4375.5-1984).

This part is YS/T 520.5-2006 "Chemical analysis of gallium - Part 5. Determination of calcium content of nitrous oxide - acetylene fire Flame atomic absorption spectrometry, "the 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, Fan Ying, Qi Yanli, Tian Rui.

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 520.5-2006 (formerly GB/T 4375.5-1984).

Chemical analysis of gallium Part 5. Determination of calcium content Nitrous oxide - acetylene flame atomic absorption spectrometry

1 Scope

This section provides Determination of gallium content of calcium.

This section applies to the determination of gallium content of calcium. Measurement range. 0.00030% to 0.0080%.

2 Method summary

Sample decomposition with nitric acid and hydrochloric, nitric purge with hydrochloric acid, in 8mol/L hydrochloric acid solution, and extracted with isopropyl ether added after a separation of gallium Quantitative strontium salt releasing agent, nitric acid - hydrochloric acid medium, at an atomic absorption spectrophotometer at a wavelength of 422.7nm to nitrous oxide - acetylene Flame measured calcium.

3.1 Nitric acid. to excellent pure nitric acid (ρ 1.42g/cm

3) as a raw material, quartz distillation vessel was heated to maintain micro-boiling distillation, take the middle distillates stored in Quartz bottle aside.

Nitrate 3.2 (8mol/L). formulated with nitric acid (3.1).

3.3 HCl. sub-boiling distillation purification.

3.4 hydrochloride (8mol/L). formulated with hydrochloric acid (3.3).

3.5 isopropyl ether. in a separatory funnel to 100g/L hydroxylamine hydrochloride solution or wash 200g/L ferrous ammonium sulfate solution was removed by shaking with peroxide Thereof, then transferred to a distillation flask, on a water bath at 80 °C purified by distillation, collecting fractions of 67 °C ~ 69 °C. Then hydrochloric acid (3.4) saturated.

3.6 washing liquid. isopropyl ether (3.5), saturated with hydrochloric acid (3.4).

3.7 strontium chloride solution. Weigh 4.5g of high purity strontium chloride ($\text{SrCl}_2 \cdot 6\text{H}_2\text{O}$), dissolved in water and diluted to 100mL. This solution 1mL Containing approximately 1.5mg strontium.

3.8 nitric acid - hydrochloric acid mixed acid. nitric acid (3.2) and hydrochloric acid (3.4) are mixed in equal volumes.

3.9 Calcium standard stock solution. Weigh 0.2497g advance at 105 °C ~ 110 °C bake 2h and cooled to room temperature in a dryer benchmark carbonate Ca [CaCO_3 $\geq 99.99\%$], placed in 300mL beaker, add 20mL water, was added dropwise hydrochloric acid (3.3) until completely dissolved and the excess 10mL, boiled rid of carbon dioxide. After cooling, transferred to 1000mL volumetric flask, dilute with water to volume, and mix. This solution containing 1mL 100 μg calcium.

3.10 Calcium standard solution. Pipette 50.00mL standard calcium stock solution (3.9), placed in 500mL volumetric flask, was added 5mL hydrochloride (3.3), dilute to the mark and mix. This solution 1mL containing 10 μg calcium.

4 Instrument

Atomic absorption spectrophotometer.

5 Sample

The samples in sealed Teflon bottle, placed in 50 °C water bath until the sample is completely converted to a liquid state, shaken, cooled to Room temperature before use.