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YS

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

YS/T 520.3-2007

Replacing YS/T 520.3-2006

**Chemical analysis of gallium. Part 3: Determination of
aluminum content. The chromazurol S-tetradecyl pyridine
bromide spectrophotometric method**

镓化学分析方法 第3部分：铝含量的测定铬天青S-溴化十四烷基吡啶分光光度法
(English Translation)

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Table of Contents

Foreword

1 Scope

2 Method summary

3 Reagents

3.1 Nitric acid, pure class distinctions (ρ 1.42g/cm

3.2 Hydrochloric acid, pure class distinctions (ρ 1.19g/cm

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 3.

The partial replacement of YS/T 520.3-2006 (formerly GB/T 4375.3-1984).

This part is YS/T 520.3-2006 "Chemical analysis of gallium - Part 3. Determination of aluminum content of chromium bromide fourteen azure S-Alkylpyridinium spectrophotometry" 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. Yun-Xia Wang, Zangmu Wen, Tian Rui, Qi Yanli.

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 520.3-2006 (formerly GB/T 4375.3-1984).

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

1 Scope

This section provides the determination of gallium aluminum content.

This section applies to the determination of gallium aluminum content. Measurement range. 0.00050% to 0.0080%.

2 Method summary

Sample with nitric acid and hydrochloric acid dissolved in 7.5mol/L hydrochloric acid medium with isopropyl ether extraction separation gallium. After separation with the residual gallium 1,10-phenanthroline, ascorbic acid masking. PH solutions in aluminum and chrome azure S, tetradecyl pyridine bromide formed about 5.4 blue-green envelope Composition, measured in a spectrophotometer at 620nm absorbance.

3.2 Hydrochloric acid, pure class distinctions (rho1.19g/cm

3.3 hydrochloric acid (5 + 3).

3.4 hydrochloric acid (1 + 23).

3.5 Aqueous ammonia (27 + 1).

3.6 isopropyl ether. saturated with hydrochloric acid (3.3).

3.7 2,4-dinitrophenol ethanol solution (1g/L).

3.8 1,10-phenanthroline solution (20g/L). Weigh 2g 1,10-phenanthroline, heating dissolved in 100mL of water. Adding a small amount of hydrochloric acid (3.2) solubilization, the solution was slightly acidic.

3.9 ascorbic acid solution (40g/L). the time is now equipped with.

3.10 Chromium Azure S solution (0.3g/L).

3.11 tetradecyl pyridine bromide solution (2g/L).

3.12 acetic acid - sodium acetate buffer solution (pH6.0). Weigh 209.2g of anhydrous sodium acetate, dissolved in water, was added 6.0mL glacial acetic acid, washed with water Diluted to 1000mL, and mix. With a pH meter calibration, adjusted to pH = 6.0.

3.13 aluminum standard stock solution. Weigh 1.0000g pure aluminum [(Al) $\geq 99.99\%$], placed in a polyethylene beaker, add 20mL water, After 3g of sodium hydroxide, until complete dissolution with hydrochloric acid (3.2) slowly neutralized to precipitate, and excess 20mL, stirring constantly to dissolve.

Cooled and transferred to water 1000mL volumetric flask, constant volume, and mix. This solution 1mL containing 1.0mg aluminum.

3.14 aluminum standard solution. Pipette 25.00mL aluminum standard stock solution (3.13), placed in 250mL volumetric flask, was added 0.5mL of hydrochloric acid Diluted (3.2) with water to volume, and mix. This solution 1mL containing 100 μ g aluminum.

3.15 aluminum standard solution. Pipette 25.00mL aluminum standard solution (3.14), placed in 250mL volumetric flask, was added 0.5mL of hydrochloric acid (3.2) Dilute with water to volume, and mix. This solution 1mL containing 10 μ g aluminum.