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

YS/T 1075.3-2015

**Methods for chemical analysis of vanadium-aluminium and
molybdenum-aluminium master alloys - Part 3: Determination of
silicon content - Molybdenum blue spectrophotometry**

钒铝、钼铝中间合金化学分析方法 第3部分：硅量的测定 钼蓝分光光度法

(English Translation)

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Foreword

YS/T 1075 "aluminum vanadium, molybdenum intermediate aluminum alloy chemical analysis method" including a total of 8 sections.

- Part 1. Determination of iron content - 1,10-phenanthroline spectrophotometry;
- Part 2. Determination of molybdenum content of lead molybdate gravimetric method;
- Part 3. Determination of silicon content - Molybdenum blue spectrophotometric method;
- Part 4. vanadium content - Inductively coupled plasma atomic emission spectrometry and ferrous ammonium sulfate titration;
- Part 5. Determination of aluminum content EDTA titration;
- Part 6. Determination of carbon content in the high-frequency combustion - infrared absorption method;
- Part 7. Determination of the amount of oxygen in the inert gas fusion - infrared method;
- Part 8. molybdenum, aluminum X- determining the amount of fluorescence spectroscopy.

This section YS/T 1075 Part 3.

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

The non-ferrous metal part by the National Standardization Technical Committee (SAC/TC243) and focal points.

This section is drafted. Northwest Nonferrous Metal Research Institute, Baoji Titanium Group Limited, the Guangzhou Research Institute of Nonferrous Metals, Chengde Vanadium has big Limited liability company Shangluo Amano Advanced Materials Co., Ltd., Central South University Institute of powder metallurgy, high-tech metal materials East Limited Donggang the company.

1 Scope

YS/T 1075 This section provides the aluminum vanadium, molybdenum determination of aluminum alloy with silicon content.

This section applies to aluminum vanadium, molybdenum determination of silicon content aluminum alloy with. Measurement range. 0.010% to 0.50%.

2 Method summary

Sample of nitric acid, hydrofluoric acid dissolution. Masked with boric acid fluoride, under certain acidity, ammonium molybdate added to silicon to form a silicon molybdenum yellow, join Grass sulfuric acid mixture to improve the acidity and eliminate phosphorus, arsenic interference with ascorbic acid will be reduced to silicon molybdenum yellow and molybdenum blue at 800nm wavelength spectrophotometer Measured absorbance.

3 Reagents

3.1

nitric acid (12).

3.2

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

3.3

saturated boric acid solution.

3.4

ammonium molybdate solution (50g/L).

3.5

oxalic acid - sulfuric acid mixture. Weigh 25g oxalic acid was added 300mL of water, stirring slowly added 100mL sulfuric acid ($\rho = 1.84\text{g/mL}$), After dissolution, add water to 1000mL volume, mix, cool to room temperature.

3.6

ascorbic acid solution (20g/L), the time is now equipped with.

3.7

silicon standard stock solution. Weigh 2.1393g silica ($w_{\text{SiO}_2} \geq 99.95\%$) (after 1000 °C high temperature burn 20min, and dry Desiccator cooled to ambient temperature) was placed in a platinum crucible, 10g of a mixed flux of sodium and potassium carbonate (21), and mix. Placed 950 °C high Temperature melting furnace to clear and transparent. Remove the cooling, hot water and slowly heated to the leaching solution clear. Remove cooled and

transferred to 1000mL capacity Dilution bottle with water to volume, and mix. Now moved to a polyethylene bottle. This solution 1mL containing 1.0mg silicon.

3.8

Silicon standard solution. Pipette 10.00mL silicon standard stock solution (3.7) in 1000mL volumetric flask, dilute with water to volume, and mix.

Now moved to a polyethylene bottle. This solution 1mL containing 10 μ g silicon.

4 Instrument

Spectrophotometer.

5 Sample

The specimen shall crush a particle size less than 500 μ m.