

ICS 71.060.40  
CCS H 12

**YS**

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

**YS/T 534.3-2007**

Replacing YS/T 534.3-2006

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**Chemical analysis methods of aluminium hydroxide. Part 3:  
Determination of silicon dioxide content. Molybdenum blue  
photometric method**

氢氧化铝化学分析方法 第3部分：二氧化硅含量的测定钼蓝光度法  
(English Translation)

**Issued on: November 14, 2007**

**Implemented on: May 1, 2008**

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**Issued by: National Development and Reform Commission**

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### Foreword

YS/T 534-2007 "chemical analysis of aluminum hydroxide" is YS/T 534-2006 (formerly GB/T 6610-2003) amendments it is divided into five parts.

--- Part 1. Determination of moisture content - Gravimetric method

--- Part 2. loss on ignition - Gravimetric method

--- Part 3. Determination of silica content molybdenum blue photometric

--- Part 4. Determination of iron oxide content phenanthroline spectrophotometry  
Determination of sodium oxide content. Part 5 ---this is Part 3.

The partial replacement of YS/T 534.3-2006 (formerly GB/T 6610.3-2003).

This part is YS/T 534.3-2006 "Chemical analysis methods of aluminum hydroxide - Part 3. Determination of silica content molybdenum blue of the Law "editorial finishing.

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

This part of the Aluminum Corporation of China Zhengzhou Research Institute is responsible for drafting.

This section drafted by the Aluminum Corporation of China Shandong Branch.

### 1 Scope

This section provides the determination of silicon dioxide content of aluminum hydroxide.

This section applies to the determination of silicon dioxide content of aluminum hydroxide.  
Measurement range. 0.005 to 0.230%.

## 2 Principle of the method

Sample with sodium carbonate - boric acid melt, the melt is dissolved in nitric acid, nitric acid in pH0.80 ~ pH0.85 medium, and silicic acid Molybdic silicon molybdenum heteropoly acid. Then, tartaric acid - sulfuric acid medium with an amino acid or ascorbic acid selective reducing silicon molybdenum blue. In points Photometer at a wavelength of 815nm, measured absorbance.

Phosphorus, vanadium coexist, the  $(V_2O_5 + P_2O_5) \leq 0.02\%$  had no effect on the determination.

## 3 Reagents

### 3.1

boric acid. pure class distinctions.

### 3.2

anhydrous sodium carbonate. pure class distinctions.

Sulfuric acid 3.3. (1 + 1).

Nitrate 3.4. (3.00mol/L).

### 3.5

mixed acid. Weigh 33.0g of tartaric acid dissolved in water and add water to 60mL, mix (if necessary filter). Sulfuric acid (3.3) to 1000mL, and mix. Such as the need to reprovision yellow solution.

### 3.6

ammonium molybdate  $[(NH_4)_6Mo_7O_{24} \cdot 4H_2O]$  solution (100g/L). if necessary, filtering, such as precipitation need more reconfiguration. Stored in polyethylene Ene bottle.

### 3.7 Reductant

#### 3.7.1

sulfamic acid solution. 7.00g of anhydrous sodium sulfite was dissolved in 50mL of water was added 1.50g1- amino-2-naphthol-4-sulfonic acid ( $C_{10}H_9NO_4S$ ), stirring to dissolve. In another beaker, 90.00g of anhydrous sodium metabisulfite (of  $Na_2S_2O_5$ ) was dissolved in 900mL Water. The two solutions were combined and diluted to 1000mL, and mix. Before using the filter with a slow quantitative filter paper. This cold dark storage solution Stored in polyethylene bottles, it can be stable for 20 days.

### 3.7.2

ascorbic acid ( $C_6H_8O_6$ ) solution (20g/L). When using the preparation.

3.8 silica standard stock solution. Weigh 0.5000g reference reagent silica (previously finely ground in an agate mortar, calcined at 1000 °C 2h, placed in the dryer to cool to room temperature), placed in a platinum crucible, was added 5.0g of sodium carbonate (3.2), stir well, then cover 0.5g, cover the crucible Cover, placed in 950 °C high temperature furnace melting 12min, remove the coolish. After addition of water, over low heat until loose frit, and the solution was transferred to a frit Teflon beaker full with hot water and wash the crucible cover. The beaker was placed on a hot plate heated to a frit completely dissolved, remove the cold to room temperature. The solution was transferred to a pre-add about 600mL water 1000mL volumetric flask, dilute with water to volume, and mix immediately moved Save a polyethylene bottle. This solution 1mL containing 0.5mg silica.

3.9 Silica Standard Solution. Pipette silica 25.00mL standard stock solution (3.8) in 500mL volumetric flask, dilute with water to the mark, mix and transferred to a polyethylene bottle. This solution 1mL containing 25µg silica. Preparation used.

3.10 matrix solution. Weigh 13.0g of sodium carbonate (3.2) containing 253mL advance slowly added nitric acid (3.4) in 1000mL beaker, Was added 36.8g of aluminum nitrate [ $Al(NO_3)_3 \cdot 9H_2O$ ], 5.0g boric acid (3.1), add water to about a 500 mL, heated to boiling, and an aqueous solution