

ICS 71.100.10  
CCS H 21

**YS**

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

**YS/T 438.4-2013**

Replacing YS/T 438.4-2001

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**Methods for physical performance determination of sandy  
alumina. Part 4: B.E.T method for determination of specific  
surface area**

砂状氧化铝物理性能测定方法 第4部分：比表面积的测定

**(English Translation)**

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### Foreword

YS/T 438 "sandy alumina determination of physical performance" is divided into five sections.

- Part 1. Determination of particle size distribution by sieving;
- Part 2. Determination of the abrasion index;
- Part 3. Determination of angle of repose;
- Part 4. Determination of specific surface area;
- Part 5. Determination of alpha- alumina content of X- ray diffraction.

This is Part 4.

The partial replacement of YS/T 438.4-2001 "sandy alumina determination of physical performance than the surface area determination." this part is YS/T 438.4-2001 "sandy alumina determination of physical performance of the specific surface area measurement," the amended and YS/T 438.4-2001 compared to the main changes are as follows.

- Original measurement step to ST-03-type surface and pore size analyzer written by common standards for the preparation than the surface area analyzer;
- Increased precision;
- Increased quality assurance and control of the content;
- The drying temperature of the sample is "300 °C ± 10 °C" changed to "105 °C ± 5 °C".

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) centralized.

This part mainly drafted by. Aluminum Corporation of China Guangxi Branch, Luoyang

Xiangjiang Wanji Aluminum Co., Ltd.

## 1 Scope

This section specifies the method for the determination of the specific surface area sandy alumina continuous flow chromatography.

This section applies to sandy alumina ratio of surface area measurement.

## 2 Method summary

Based on low-temperature physics adsorption principle, a single channel continuous flow of gas chromatography, by measuring the sandy alumina samples in liquid nitrogen (-196 °C) at a temperature on the adsorption of nitrogen using adsorption theory and calculated the BET specific surface area of the sample layers.

## 3 Reagents

### 3.1

Nitrogen. more than 99.99% purity.

### 3.2

Helium. purity of 99.99%.

### 3.3

high purity liquid nitrogen.

### 3.4

ethanol. AR.

### 3.5

Industrial hydrochloric acid.

### 3.6

glass wool.

### 3.7

cotton.

## 4 Instrument

Surface area enables the nitrogen adsorption occurs at liquid nitrogen (-196 °C) temperature and single-point or multi-point analysis. 4.1 surface area analyzer Analyzer.

**4.2**

Determination of the data processing system.

**4.3**

sample tube.

**4.4**

dryer.

**4.5**

Oven. Maximum temperature 300 °C.

**4.6**

Analytical balance. accuracy 0.1mg.

**4.7**

mug.

## **5 Sample**

**5.1**

empty sample tube (4.3) at 105 °C ± 5 °C drying for about 30min, desiccator (4.4) to cool to room temperature, and call quality.

**5.2**

Sample loaded sample tube (5.1), the sample together with a sample tube together drying 2h at 105 °C ± 5 °C, remove the desiccator (4.4) to cool to room temperature in standby.

**5.3**

will bake a good sample and sample tube (5.2) to determine the quality of subtraction of the sample, the sample tube end lightly stuffed with wool, the completed