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**YS**

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

**YS/T 667.2-2009**

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**The testing methods for chemical alumina. Part 2: Determining  
concentration of arsenic, mercury and lead in aluminum  
hydroxide for filler and pseudo boehmite by HG-ICP-AES**

化学品氧化铝化学分析方法 第2部分：填料用氢氧化铝及拟薄水铝石中砷汞、铅  
含量的测定氢化物发生-电感耦合等离子体发射光谱法

**(English Translation)**

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### Foreword

YS/T 667 "Chemical Alumina Chemical Analysis Method" is divided into four parts.

- Part 1 Determination of cadmium, chromium and vanadium content in aluminum hydroxide and pseudo-boehmite for filler - Inductively coupled plasma emission Spectral method -

Part 2 Determination of arsenic, mercury and lead in aluminum hydroxide and pseudo-boehmite for filler - Hydride generation - Inductively coupled Ion emission spectroscopy;

- Part 3. Determination of cadmium, chromium and vanadium in zeolite - Inductively coupled plasma - atomic emission spectrometry;

Determination of arsenic and mercury in zeolites - Hydride generation - Inductively coupled plasma - atomic emission spectrometry.

This section is part 2.

Appendix A to this section is an informative appendix.

This part of the National Nonferrous Metals Standardization Technical Committee proposed and centralized.

This part of the drafting unit. China Aluminum Industry Co., Ltd. Shandong Branch, China Nonferrous Metals Industry Standard Measurement Quality Institute.

### 1 Scope

This part of YS/T 667 specifies the determination of arsenic, mercury and lead in aluminum hydroxide and pseudo-boehmite for filler.

This part applies to the determination of arsenic, mercury and lead in aluminum hydroxide and pseudo-boehmite. Determination of the range. arsenic  $5 \times 10^{-5}\%$  ~  $5 \times 10^{-3}\%$ ; mercury  $1 \times 10^{-5}\%$  to  $5 \times 10^{-3}\%$ ; lead  $5 \times 10^{-4}\%$  to  $5 \times 10^{-3}\%$ .

## 2 Principle of the method

The sample is dissolved in hydrochloric acid, and at a certain acidity, the element under test is hydrogenated in the hydride generator to be enriched. And then import Argon plasma source excitation, the spectral determination. To select an effective complexing agent to mask the effect of the matrix and other interfering elements on the assay.

## 3 Reagent

Unless otherwise stated, only deionized water or comparable purity of water is used in the analysis.

### 3.1

hydrochloric acid 1 + 1 (excellent grade by sub-boiling secondary distillation).

### 3.2

Arsenic Standard Solution. This standard stock solution (1mg/mL) is provided by the National Center for Standard Material Research. Use the above standard solution Diluted with hydrochloric acid (3.1) 100 times, diluted standard solution 1mL containing 10µg arsenic.

### 3.3

Mercury Standard Solution. This standard stock solution (1mg/mL) is provided by the National Center for Standard Material Research. Use the above standard solution Diluted with hydrochloric acid (3.1) 100 times, diluted with 1mL of standard solution containing 10µg of mercury.

### 3.4

Lead Standard Solution. This standard stock solution (1mg/mL) is provided by the National Center for Standard Material Research. Use the above standard solution Diluted 100 times with hydrochloric acid (3.1), and diluted 1 mL of standard solution containing 10 µg of lead.

### 3.5

Mixed standard solution. 10.00mL arsenic standard solution (3.2), 10.00mL mercury standard solution (3.3) in 100mL Volume bottle, add 20mL hydrochloric acid (3.1), and then to the second deionized water diluted to the mark, mix. This mixed standard solution of arsenic, mercury element concentrated each of 1 µg/mL.

### 3.6

aluminum matrix solution. Weigh 13.2350g pure aluminum ( > 99.999%) in a beaker, add 250mL hydrochloric acid (3.1), low temperature heated to Dissolve completely. Into the 500mL volumetric flask, cooled to room temperature, diluted with secondary deionized water to the mark, mix. This solution 1L oxygen Aluminum 50g.

3.7 10 g/L potassium iodide -10 g/L ascorbic acid and 50 g/L thiourea mixed solution. Weigh 1 g of potassium iodide, 1 g of ascorbic acid and 5 g of sulfur Urea, dissolved in 100mL water, shake.

380 potassium ferricyanide solution. Weigh 5 grams of potassium ferricyanide dissolved in 100mL deionized water, this solution 1L potassium ferricyanide 50g.

### **3.9**

sodium borohydride solution. Weigh 1.5g sodium borohydride in a 100mL beaker, add 1 to 2 solid sodium hydroxide, add 100mL Water dissolved. The concentration of sodium borohydride in this solution is 15 g/L; weigh 3.0 g of sodium borohydride in a 100 mL beaker, add 2 to 4 solids Sodium hydroxide, add 100mL water to dissolve. This solution 1L sodium borohydride 30g.

### **3.10**

sodium hydroxide solution. Weigh 24g of the standard solid sodium hydroxide, add deionized water dissolved into the 100mL volumetric flask. This solution Liquid 1L containing 6 mol of sodium hydroxide.