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

YS/T 667.4-2009

**The testing methods for chemical alumina. Part 4: Determining
concentration of arsenic and mercury in 4A zeolite by
HG-ICP-AES**

化学品氧化铝化学分析方法 第4部分：4A沸石中砷、汞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 methods," is divided into four parts.

--- Part 1 emits light with aluminum hydroxide filler and quasi boehmite of cadmium, chromium, vanadium content - Inductively coupled plasma Spectroscopy;

--- Part 2 generating filler aluminum hydroxide and quasi boehmite arsenic, mercury, lead content was measured hydride - Inductively Coupled Plasma emission spectrometry;

--- Part 3 4A zeolite cadmium, chromium, vanadium content - Inductively coupled plasma atomic emission spectrometry;

--- Part 4 Determination of 4A Zeolite hydride arsenic, mercury content generation - inductively coupled plasma emission spectrometry.

This is Part 4.

Appendix A of this section is an informative annex.

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

Drafting this Part. Aluminum Corporation of China Shandong Branch, China Nonferrous Metals Industry Standards and Metrology Institute for Quality.

1 Scope

YS/T of the provisions of the section 667 determination 4A zeolite arsenic, mercury content.

This section applies to arsenic, mercury determination 4A zeolite. Measuring range. Arsenic $5 \times 10^{-5}\% \sim 5 \times 10^{-3}\%$; mercury $1 \times 10^{-5}\% \sim 5 \times 10^{-3}\%$.

2 Principle of the method

Sample is dissolved in hydrochloric acid, at a certain acidity, measured elements in the hydride generator enriched through hydrogenation. Then import Argon plasma excitation light source, spectral measurement. To choose effective complexing agent to mask the influence of matrix interference and other elements on the determination.

3 Reagents

Unless otherwise indicated in the analysis using only deionized water or equivalent purity.

3.1

hydrochloric acid 1 + 1 (excellent pure by sub-boiling second distillation).

3.2

arsenic standard solution. This standard stock solution (1mg/mL) provided by the National Research Center. When using the above standard solution (3.1) was diluted 100-fold with hydrochloric acid, diluted standard solution 1mL containing 10 μ g arsenic.

3.3

mercury standard solution. This standard stock solution (1mg/mL) provided by the National Research Center. When using the above standard solution (3.1) was diluted 100-fold with hydrochloric acid, diluted standard solution 1mL containing 10 μ g mercury.

3.4

mixed standard solution. accurate Pipette respectively 10.00mL arsenic standard solution (3.2), 10.00mL mercury standard solution (3.3) to 100mL volumetric flask, add 20mL of hydrochloric acid (3.1), and then diluted to the mark with secondary deionized water, and mix. This mixed standard solution of arsenic, Elemental mercury concentration was 1 μ g/mL.

3.5

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

3.6

sodium base solution. Weigh 5.08g spectroscopically pure sodium chloride (pre-ignition 1h at 500 °C muffle furnace and cooled to room temperature) in a beaker, Deionized water was added 30mL dish cover sheet, after a hot plate until the sample is completely dissolved in, transferred to 100mL volumetric flask, cool to room temperature, in secondary diluted with deionized water to the mark, 1L solution containing 20g sodium.

3.7 10g/L potassium iodide -10g/L ascorbic acid and 50g/L thiourea mixed solution. Weigh

1g of potassium iodide, 1g 5g ascorbic acid and sulfur Urea dissolved in 100mL of water, shake well.

3.8

sodium borohydride solution. Weigh 1.5g of potassium borohydride in 100mL beaker, add 1 to 2 of solid sodium hydroxide, was added 100mL Dissolved in water. This solution 1L sodium boron hydride 15g.

3.9

high purity argon (> 99.999%).

4 Instrument

Full Spectrum Direct Reading plasma emission spectrometer; hydride generator.

5 Sample

Samples at 105 °C $\pm$ 5 °C oven baking 1h. Placed in a desiccator, cooled to room temperature, and immediately weighed.