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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 6609.32-2009

**Chemical analysis methods and determination of physical
performance of alumina -- Part 32: Determination of γ -alumina
content by X-ray diffraction**

氧化铝化学分析方法和物理性能测定方法 第32部分： α -三氧化二铝含量的测定 X-
射线衍射法

(English Translation)

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Foreword

GB/T 6609 "alumina chemical analysis methods and determination of physical performance" is divided into 37 parts.

- Part 1. Inductively coupled plasma atomic emission spectrometry Determination of trace elements;
- Part 2. Determination of 300 °C and 1000 °C mass loss;
- Part 3. molybdenum blue spectrophotometric determination of silicon dioxide content;
- Part 4. phenanthroline spectrophotometric determination of ferric oxide content;
- Part 5. Determination of sodium oxide content;
- Part 6. flame photometric determination of potassium content;
- Part 7. Determination of titanium dioxide content of the two safety for DAM spectrophotometry;
- Part 8. diphenyl carbon acid dihydrazide spectrophotometric determination of chromium oxide content;
- Part 9. neocuproine spectrophotometric determination of copper oxide content;
- Part 10. benzoyl phenylhydroxylamine extraction spectrophotometric determination of the content of vanadium pentoxide;
- Part 11. Flame atomic absorption spectrometric method for the determination of manganese oxide content;
- Part 12. Flame Atomic Absorption Spectrometry Determination of zinc oxide content;
- Part 13. Flame atomic absorption spectrometric method for the determination of calcium

oxide content;

--- Part 14. lanthanum - alizarin complex spectrophotometric determination of fluorine content;

--- Part 15. Rhodanate spectrophotometric determination of chlorine content;

--- Part 16. Determination of curcumin boron trioxide content;

--- Part 17. molybdenum blue spectrophotometric determination of phosphorus pentoxide content;

--- Part 18. N, N- dimethyl-p-phenylenediamine spectrophotometric determination of sulfate content;

--- Part 19. Flame atomic absorption spectrometry determination of lithium oxide content;

--- Part 20. Flame atomic absorption spectrometric method for the determination of magnesium oxide content;

--- Part 21. Butyl Rhodamine B spectrophotometric determination of gallium oxide content;

--- Part 22. Sampling;

--- Part 23. sample preparation and storage;

--- Part 24. Determination of angle of repose;

--- Part 25. Determination of bulk density;

--- Part 26. Determination of effective density Pyknometer;

--- Part 27. Particle size analysis by sieving;

--- Part 28. less than 60 μ m fine powder particle size distribution measuring wet screening;

--- Part 29. Assay index;

--- Part 30. Determination of trace elements X-ray fluorescence spectrometry;

--- Part 31. Determination of flow angle;

--- The first part 32. alpha- alumina Determination of X- ray diffraction method;

--- Part 33. Determination of the abrasion index;

--- Part 34. Calculation of the content of aluminum oxide;

--- Part 35. specific surface area by nitrogen adsorption method;

--- Part 36. Determination of the flow of time;

--- Part 37. Determination of particle size less than 20 μ m particle content.

This is Part 32 GB/T 6609's.

This section Edit "Determination of alpha-Al₂O₃ content of aluminum oxide - Part 3 X- ray diffraction method" With AS2879.3-1991.

When this part of the revised adoption AS2879.3-1991, delete its preface, table of contents, references and the first column of Table 1.

To facilitate comparison, listed in Appendix A of this section and the corresponding clauses AS2879.3-1991 chapter of the table.

Appendix A of this section is an informative annex.

This part is proposed by the China Nonferrous Metals Industry Association.

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

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

1 Scope

GB/T 6609 This section provides measured by X- ray diffraction alumina alpha-Al₂O₃ content.

This section applies to the determination of alumina alpha-Al₂O₃ content. Measuring range. ≤50%.

2 Principle of the method

The sample and standard sample ratio calculated (012) crystal face diffraction peak area of the net to give the content of the sample of alpha-Al₂O₃.

NOTE: (012) crystal surface does not overlap with other diffraction peak phase alumina.

3 Reagents

3.1

During the assay, such as no special requirements, use only analytical grade reagents and distilled water.

3.2

Alumina. metallurgical grade.

Note: for the preparation of alpha-Al₂O₃ content of standard samples of 100% alumina, the alumina of the type that may affect the measured diffraction peak intensity. Different levels of Diffraction peak intensity of metallurgical grade alumina may be different.

3.3

hydrochloric acid ($\rho_{20\text{ }^{\circ}\text{C}} = 1.16\text{g/mL} \sim 1.18\text{g/mL}$).

3.4

hydrochloric acid (10%). A 312mL of hydrochloric acid (3.3) into the 1L flask, add water to 1L, and mix.

Preparation of standard samples 3.5 alpha-Al₂O₃ content of 100% as follows.

3.5.1

Weigh about 100g alumina (3.2), into a 600mL beaker, add 250mL of hydrochloric acid (3.4). Electromagnetic stirrer at room temperature was stirred 3h, was filtered through filter paper and the residue was washed with water, hydrochloric acid was completely removed.

Note: Rinse remove sodium oxide and other impurities. These impurities in the calcination process will weaken the alpha-phase may generate beta-Al₂O₃.

3.5.2

The good wash alumina at $105\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$ 2h dried in an oven. After drying the alumina platinum dish placed in the high temperature the furnace temperature was raised to $1300\text{ }^{\circ}\text{C}$, $1300\text{ }^{\circ}\text{C}$ burning at least 24h. Removed, placed in a desiccator, cool to room temperature.

4 Instrument

4.1

X- ray diffractometer.

4.2

high-temperature furnace. it can be controlled at $1300\text{ }^{\circ}\text{C} \pm 50\text{ }^{\circ}\text{C}$.

5 Preparation, samples

With a collection tank or rotary riffle test sample taken 50g, carefully cleaned to prevent sample loss of fine particles. Before the test sample to be mixed Uniform.

Step 6

6.1 Determination of the number of on the same sample should be independently measured twice and averaged.

6.2 Sample Preparation

A portion of the sample was polished, and the sample size for a standard sample is ground to less than $45\mu\text{m}$. Sample and standard samples must have parallel samples,