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YB

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

YB/T 4078.1-2003

Replacing YB/T 4078-1991

**Chemical analysis of zirconia refractories-Part 1: Determination
of zirconia oxide-Mandelic acid gravimetric method
(English Translation)**

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Foreword

YB/T 4078 "Chemical Analysis Method for Zirconia Refractories" is divided into the following two parts.

--- Part 1. Determination of zirconia (?) by gravimetric method.

--- Part 2. Determination of the amount of zirconia (?) by the EDTA volumetric method.

This part is the first part of YB/T 4078-2003.

This part replaces YB/T 4078-1991 "Zirconium sizing nozzle chemical analysis method - Determination of zirconium dioxide by bitter almond acid gravimetric method (?) quantity.

The main changes in this section compared with YB/T 4078-1991 are as follows.

--- Added preface, normative references, quality assurance and control, test reports, etc.;

--- Detailed preparation of sample preparation, increased operability;

--- Expand the "measurement range (mass fraction) from 60.00% to 80.00%" to "measurement range (mass fraction) of 50.00% to 98.00%";

--- Added provisions for the number of rounds of analysis values and allowed for other regulations;

--- According to GB/T 1.1-2000 "Standardization Work Guide Part 1. Standard Structure and Writing Rules" and GB/T.20001.4-2001 the structure and format were adjusted in the provisions of the Standard Writing Rules Part 4. Chemical Analysis Methods.

Appendix A of this section is a normative appendix.

This part is proposed and managed by the National Technical Committee for Refractory Standardization (CSBTS/T C193).

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1 Scope

This section specifies the method for the determination of zirconia by the phenylglycolic acid gravimetric method. The arbitration analysis uses this method.

This section applies to the determination of the amount of zirconia (yttrium) in zirconia refractories. The measurement range (mass fraction) is 50.00%~ 98.00%.

2 Normative references

The terms in the following documents become the terms of this section by reference in this section. All dated references, followed by all Modifications (not including errata content) or revisions do not apply to this section, however, parties to agreements based on this section are encouraged to study is it possible to use the latest version of these files? For undated references, the latest edition applies to this section.

GB/T 8170 numerical rounding rules GB/T 10325 Forming and Accepting Rules for Shaped Refractory Products GB/T 17617 Sampling of refractory raw materials and unshaped refractory materials

3 Principle

The sample is melted with potassium hydrogen fluoride, and sulfuric acid is added to remove the fluorine. The alkali metal sulfate is separated by ammonia water, and the precipitate is dissolved with hydrochloric acid.

In a 2mol/L hot hydrochloric acid medium, phenylglycolic acid is added to form a white flocculent precipitate of zirconium phthalate (?), which is transformed into the crystal form precipitated, was burned at 950 ° C, and weighed as an oxide.

4 Reagents

4.1

Potassium hydrogen fluoride.

4.2

Ammonium chloride.

4.3

Ammonium chloride solution (20g/L).

4.4

phenylglycolic acid solution (100g/L). used after filtration.

4.5

phenylglycolic acid solution (10g/L). prepared with hydrochloric acid (1 + 9).

4.6

Hydrochloric acid (1+1).

4.7

Ammonia water (rho0.90g/mL).

4.8

Anhydrous ethanol.

4.9

Sulfuric acid (1+1).

4.10

methyl red indicator (1g/L). Weigh 0.1g of methyl red dissolved in 60mL of ethanol (4.8), add water to 100mL.

5 Instruments

5.1

Balance (sensing 0.1mg).

5.2

Platinum plate ($\geq 75\text{mL}$).

5.3

Platinum crucible or porcelain crucible (30mL).

5.4

Constant temperature water bath.

5.5

High temperature furnace. The box type electric furnace with the highest operating temperature $\geq 1100\text{ }^{\circ}\text{C}$ and automatic temperature control.