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**Methods for Chemical Analysis of Bauxite - Part 21:
Determination of Organic Carbon Content - Titrimetric
Method**

铝土矿石化学分析方法 第 21 部分：有机碳含量的测定 滴定法

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Methods for Chemical Analysis of Bauxite - Part 21: Determination of Organic Carbon Content - Titrimetric Method

1 Scope

This Part specifies the determination method of organic carbon content in bauxite.

This Part applies to the determination of organic carbon content in bauxite.
Determination range: 0.01% ~ 1.00%.

2 Method Principle

After boiling and decomposing carbonate by phosphoric acid, use silver sulfate as a catalyst. Use potassium persulfate to oxidize the carbon in the organic matter to carbon dioxide; and then use thymolphthalein as an indicator; then use ethanol-ethanolamine-potassium hydroxide solution to absorb and titrate.

3 Reagents

3.1 Silver sulfate.

3.2 Phosphoric acid (1+1).

3.3 Saturated aqueous solution of potassium persulfate.

3.4 Sodium oxalate standard solution: take 0.2000g of sodium oxalate (reference substance) that has been dried at 130°C in advance; dissolve it by water; transfer it to a 200mL volumetric flask; dilute to the mark with water; and shake it well. 1mL of this solution contains 1mg of sodium oxalate.

3.5 Ethanol-ethanolamine absorption solution: mix evenly 900mL of absolute ethanol with 100 mL of ethanolamine; and add 0.1g of thymolphthalein to mix evenly.

3.6 Ethanol-ethanolamine-potassium hydroxide standard titration solution: dissolve 1.3g of potassium hydroxide in 900mL of absolute ethanol; stand for one day; filter out the insoluble matter. Add 100mL of ethanolamine and 0.1g of thymolphthalein indicator; mix evenly. The concentration of the solution is determined in accordance with sub-

- 8 - Condensing tube;
- 9 - Three-necked flask, 500mL;
- 10 - Electric furnace;
- 11 - Separating funnel, 100mL;
- 13 - Gas scrubber, containing 20% copper sulfate;
- 16 - Absorption cup, containing absorption solution;
- 17 - Reference cup, containing absorption solution;
- 18 - Burette.

Figure 1 – Determination Device

5 Specimen

Grind the specimen by a mortar to pass through a 71 μ m sieve; dry the ground specimen at 110°C $\pm$ 5°C for 2h; place it in a desiccator; and cool to room temperature for later use.

6 Analysis Procedures

6.1 The number of determinations

The same specimen shall be determined for twice independently and the average value shall be taken.

6.2 Blank test

Do a blank test with the testing material.

6.3 Connect the determination device according to the diagram of the determination device; add ethanol-ethanolamine absorption solution (3.5) to the absorption cup and the reference cup, respectively; so that the liquid level of the solution is 2cm~4cm above the sieve plate in the cup. Ventilate (control the flowrate to about 0.3L/min); use ethanol-ethanolamine-potassium hydroxide standard titration solution (3.6) to titrate until the solution is stable blue (the color in the absorption cup is the same as the reference cup); stop ventilation.

6.4 Remove the carbonate in the specimen and the carbon dioxide in the system

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