



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

GB/T 11064.3-2013

Replacing GB/T 11064.3-1989

**Methods for chemical analysis of lithium carbonate, lithium
hydroxide monohydrate and lithium chloride - Part 3:
Determination of lithium chloride content - Potentiometric
method**

**碳酸锂、单水氢氧化锂、氯化锂 化学分析方法 第3部分：氯化锂量的测定
电位滴定法**

Issued on: September 6, 2013

Implemented on: May 1, 2014

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of the People's Republic of China..**

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Foreword

GB/T 11064 “Methods for chemical analysis of lithium carbonate, lithium hydroxide monohydrate and lithium chloride” is divided into 16 parts:

- Part 1: Determination of lithium carbonate content - Acid-alkali titrimetric method;
- Part 2: Determination of lithium hydroxide content - Acid-alkali titrimetric method;
- Part 3: Determination of lithium chloride content - Potentiometric method;
- Part 9: Determination of sulfate content - Barium sulfate nephelometry method;
- Part 10: Determination of chloride content - Silver chloride nephelometry method;
- Part 11: Determination of Acid-insolubles Content - Gravimetric method;
- Part 15: Determination of fluoride content - Ion selective method;

manganese, cadmium and aluminum content - Inductively coupled plasma atomic emission spectrometry.

This Part is drafted in accordance with the rules given in GB/T 1.1-2009.

This Part replaces GB/T 11064.3-1989 “Methods for chemical analysis of lithium carbonate, lithium hydroxide monohydrate and lithium chloride - Part 3: Determination of lithium chloride content - Potentiometric method”.

Compared with GB/T 11064.3-1989, the main changes of this Part are following:

- RE-EDIT the text format; ADD the test report.

This Part shall be under the jurisdiction of National Standardization Technical Committee of Nonferrous Metals (SAC/TC 243).

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The historical version replaced by this Part is as follows:

1 Scope

This Part of GB/T 11064 specifies the determination method for lithium chloride content in lithium chloride.

This Part applies to the determination of lithium chloride content in lithium chloride. The determination range: more than 95.00%.

2 Method summary

The sample is dissolved in water. In acidic solution, use silver (or silver-silver sulfide) electrode as measuring electrode; use calomel electrode as reference electrode; and use silver nitrate standard solution to titrate chloride. Use secondary derivative to determine the reaction end; use the consumed amount of silver nitrate standard titration solution to calculate the content of lithium chloride.

3 Reagents

Unless otherwise indicated, all reagents used in this Part are analytical reagent, the water used is deionized water.

3.1 Nitrate (1+1), guarantee reagent.

3.2 Bromophenol blue ethanol solution (1g/L).

3.3 Sodium chloride standard solution [$c(\text{NaCl}) = 0.1000\text{mol/L}$]: Weigh 5.8443g of sodium chloride (reference reagent) which has been burned in advance at $450^{\circ}\text{C} \sim 500^{\circ}\text{C}$ for 1.5h, and placed in the dryer to cool to room temperature. Place them in a 250mL beaker; add 50mL of water to dissolve; transfer to a 1000mL volumetric flask; dilute with water to scale; mix well. 3.4 Silver nitrate standard titration solution [$c(\text{AgNO}_3) = 0.1000\text{mol/L}$]. 3.4.1 Preparation: Weigh 17.0g of silver nitrate; place them in a 250mL beaker; add 50mL of water to dissolve; transfer to a 1000mL brown volumetric flask; dilute with water to scale; mix well. 3.4.2 Calibration: Calibration shall be done with sample determination in parallel. Weigh three-ports 25.00mL of sodium chloride standard solution (3.3); place them in 250mL beakers respectively; add water to 150mL; add a drop of bromophenol blue ethanol solution (3.2); add 1 drop $\sim$ 2 drops of nitrate (3.1) until the solution turns to yellow; place electromagnetic stirring bars; place the beakers on an electromagnetic stirrer; start the electromagnetic stirrer;

4 Instruments

4.1 Potentiometer: the accuracy is 2mV.

4.2 Measuring electrode: silver electrode or silver-silver sulfide electrode.

4.3 Reference electrode: double-liquid-junction-type saturated calomel electrode; the outer casing is filled with nitrate titration solution (0.1mol/L) during titration.

5 Samples

Samples shall be baked in advance at $250^{\circ}\text{C} \sim 260^{\circ}\text{C}$ for 2h, and placed in the dryer to cool to room temperature.