

Translated English of Chinese Standard: GB/T11064.12-2013

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NATIONAL STANDARD OF THE
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ICS 77.120.99

H 64

GB/T 11064.12-2013

Replacing GB/T 11064.12-1989

**Methods for chemical analysis of lithium carbonate,
lithium hydroxide monohydrate and lithium chloride -
Part 12: Determination of carbonate content -
Acid-alkali titrimetric method**

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Issued on: November 27, 2013

Implemented on: August 01, 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 4: Determination of potassium and sodium content - Flame atomic absorption spectrometric method;
- Part 5: Determination of calcium content - Flame atomic absorption spectrometric method;
- Part 6: Determination of magnesium content - Flame atomic absorption spectrometric method;
- Part 7: Determination of iron content - 1,10-phenanthroline spectrophotometric method;
- Part 8: Determination of silicon content - Molybdenum blue spectrophotometric 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 12: Determination of carbonate content - Determination of lithium chloride content - Potentiometric method;
- Part 13: Determination of aluminum content - Chromazurol S-cetylpyridine bromide spectrophotometric method;
- Part 14: Determination of arsenic content - Molybdenum blue spectrophotometric method;
- Part 15: Determination of fluoride content - Ion selective method;
- Part 16: Determination of calcium, magnesium, copper, lead, zinc, nickel, manganese, cadmium and aluminum content - Inductively coupled plasma atomic emission spectrometry.

This Part is part 12 of GB/T 11064.

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

This Part replaces GB/T 11064.12-1989 "Lithium hydroxide monohydrate - Determination of carbon dioxide content - Absorption titrimetric method".

Compared with GB/T 11064.12-1989, the main changes of this Part are as follows:

- ADD the repeatability terms;
- 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).

Drafting organizations of this Part: Xinjiang Wuxin Lithium Salt Development Co., Ltd., Sichuan Tianqi Lithium Industries Inc., Haimen Ronghui General Lithium Co., Ltd., Jiangxi Ganfeng Lithium Co., Ltd., and Xinjiang Research Institute of Non ferrous Metals.

The main drafters of this Part: Xia Shufen, Gou Haixia, Luo Yuping, Deng Hongyun, Xie Shaozhong, Yi Qingyun, and Guan Yuzhen.

The historical version replaced by this Part is as follows:

- GB/T 11064.12-1989.

Methods for chemical analysis of lithium carbonate, lithium hydroxide monohydrate and lithium chloride - Part 12: Determination of carbonate content - Acid-alkali titrimetric method

1 Scope

This Part of GB/T 11064 specifies the determination method of carbonate content in lithium carbonate, in lithium hydroxide monohydrate and in lithium chloride.

This Part applies to the determination of carbonate content in lithium carbonate, in lithium hydroxide monohydrate, and in lithium chloride. The determination range: 0.15%~2.00%.

2 Method Summary

Dissolve the sample with water; take phenolphthalein as the indicator; use hydrochloric acid standard solution to titrate until the red in the solution is disappeared; then take methyl orange as the indicator. Continue to titrate it with hydrochloric acid standard solution until orange-red is stable, that is the end; calculate the amount of carbonate.

3 Reagents

Unless otherwise specified, the reagent used in this Part is an analytical pure reagent, and the water used here in this Part the secondary deionized water.

3.1 Phenolphthalein indicator (10 g/L): weigh 1 g of phenolphthalein and dissolve it in 100 mL of ethanol (95%).

3.2 Methyl orange indicator (1 g/L): weigh 0.1 g of methyl orange, dissolve it in water at 70°C, cool it down, dilute it to 100 mL.

3.3 Hydrochloric acid solution (2 mol/L): pipette 167 mL of hydrochloric acid ($\rho = 1.19$ g/mL), place it in a 1000 mL volumetric flask, dilute it to the mark, shake it well.

3.4 Methyl red - bromocresol green indicator: pipette 30 mL of bromocresol green solution (3.4.1) and 10 mL of methyl red solution (3.4.2), mix them well.

3.4.1 Bromocresol green solution: weigh 0.1 g of bromocresol green and dissolve it in 100 mL of ethanol.

3.4.2 Methyl red solution: weigh 0.2 g of methyl red and dissolve it in 100 mL of ethanol

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