

ICS 77.120.99

CCS H14



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

GB/T 11064.2-2023

Replacing GB/T 11064.2-2013

**Methods for chemical analysis of lithium carbonate, lithium hydroxide
monohydrate and lithium chloride - Part 2: Determination of lithium
hydroxide content - Acid-alkali titrimetric method**

碳酸锂、单水氢氧化锂、氯化锂化学分析方法 第2部分：氢氧化锂含量的测定 酸碱滴定法

Issued on: May 23, 2023

Implemented on: December 1, 2023

**Issued by: State Administration for Market Regulation;
Standardization Administration of China**

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020 Directives for standardization - Part

1. Rules for the structure and drafting of standardizing documents. This document is part 2 of GB/T 11064 Methods for chemical analysis of lithium carbonate, lithium hydroxide monohydrate and lithium chloride. The following parts of GB/T 11064 have been issued. -- Part

1. Determination of lithium carbonate content - Acid-alkali titrimetric method; -- Part

2. Determination of lithium hydroxide content - Acid-alkali titrimetric method; -- Part

1 Scope

GB/T 11064.2-2023 is the Chinese national standard on methods for chemical analysis of lithium carbonate, lithium hydroxide monohydrate and lithium chloride - part 2: determination

of lithium hydroxide content - acid-alkali titrimetric method, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 December 2023. Classification: ICS 77.120.99, CCS H14. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes a method for the determination of lithium hydroxide content in lithium hydroxide monohydrate by acid-alkali titration. This document applies to the determination of lithium hydroxide content in lithium hydroxide monohydrate. The determination range (mass fraction) is greater than or equal to 55.00%.

2 Normative references

The following documents contain the provisions which, through normative reference in this document, constitute the essential provisions of this document. For the dated referenced documents, only the versions with the indicated dates are applicable to this document; for the undated referenced documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 6682 Water for analytical laboratory use - Specification and test methods

GB/T 8170 Rules of rounding off for numerical values & expression and judgment of limiting values

GB/T 12805 Laboratory glassware - Burettes

GB/T 17433 Foundation terms for chemical analysis of metallurgical products

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

4 Principles

The sample is dissolved with a certain amount of hydrochloric acid standard solution, methyl red-bromocresol green is used as the indicator, then the total alkalinity of the test solution is titrated with hydrochloric acid standard titration solution, and the content of lithium hydroxide is calculated according to the consumption of hydrochloric acid standard titration solution.

5 Reagents or materials

Unless otherwise specified, only analytically pure reagents are used.

5.1 Water It shall conform to grade II water specified in GB/T 6682, and shall be sealed and cooled to room temperature after boiling.

5.2 Methyl red-bromocresol green indicator Solution I. Weigh

0.1 g of bromocresol green, dissolve it in ethanol (95%), and dilute the solution to 100 mL with ethanol (95%). Solution II. Weigh

0.2 g of methyl red, dissolve it in ethanol (95%), and dilute the solution to 100 mL with ethanol (95%). Take 30 mL of solution I and 10 mL of solution II, and mix well.

5.3 Hydrochloric acid standard titration solution [$c(\text{HCl}) =$

0.30 mol/L]

5.3.1 Preparation. Pipette 25 mL of hydrochloric acid ($\rho =$

1.19 g/mL), place it in a 1000 mL volumetric flask, dilute to the mark with water, and mix well.

6 Instruments and equipment

A burette (grade A) with a stopper, 50 mL, shall comply with the provisions of GB/T 12805.

7 Samples

Samples shall be packed in plastic containers and sealed for storage.

8.1 Sample Quickly weigh

0.50 g of the sample, accurate to 0.0001 g.

8.2 Parallel test Carry out two experiments in parallel, and take the average value as the result.

8.3 Blank test Do a blank test at the same time as the sample test.

8.4 Determination Put the test sample (8.1) in a 250 mL Erlenmeyer flask in which 30 mL of hydrochloric acid standard titration solution (5.3) has been pre-added, add 10 drops of methyl red- bromocresol green indicator (5.2), and titrate with hydrochloric acid standard titration solution (5.3) until the test solution turns from green to wine red, that is the end point. Carbon dioxide interference shall be avoided during the titration.

9 Experimental data processing

The content of lithium hydroxide is expressed as the mass fraction of lithium hydroxide (wLiOH) and calculated according to formula (2).

10 Precision

10.1 Repeatability The measured values of two independent test results obtained under repeatability conditions shall be within the average value range given in Table 1; the absolute difference between the two test results shall not exceed the repeatability limit (r), and the probability of exceeding the repeatability limit (r) shall not be more than 5%. The repeatability limit (r) is obtained according to the data in Table 1 by linear interpolation or extrapolation.

10.2 Reproducibility The measured values of two independent test results obtained under reproducibility conditions shall be within the average value range given in Table 2; the absolute difference between the two test results shall not exceed the reproducibility limit (R), and the probability of exceeding the reproducibility limit (R) shall not be more than 5%. The reproducibility limit (R) is obtained according to the data in Table 2 by linear interpolation or extrapolation.

12 Determination of carbonate content - acid-alkali titrimetric 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 fluorine content - Ion selective method; -- Part

16.Determination of calcium, magnesium, copper, lead, zinc, nickel, manganese, cadmium, aluminum, iron and sulfate contents - Inductively coupled plasma atomic emission spectrometry. This document replaces GB/T 11064.2-2013 Methods for chemical analysis of lithium carbonate, lithium hydroxide monohydrate and lithium chloride - Part 2.

Determination of lithium hydroxide content - Acid-alkali titrimetric method. Compared with