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

GB/T 10267.1-2025

Replacing GB/T 10267.1-1988

**Methods for analysis of calcium metal - Part 1: Determination of
chlorine by chloride selective electrode method**

金属钙分析方法 第1部分：氯离子选择性电极法测定氯

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document is Part 1 of GB/T 10267 "Analysis of Metallic Calcium". GB/T 10267 has been published in the following parts.

- 1. Determination of chlorine by chloride ion selective electrode method;
- 2. Photometric determination of trace silicon;
- 3. Direct determination of iron, nickel, copper, manganese and magnesium by atomic absorption spectrophotometry;
- 4. Spectrophotometric determination of aluminum using 8-hydroxyquinoline-chloroform extraction;
- 5. Determination of nitrogen using the distillation-Nessler reagent photometric method. This document replaces GB/T 10267.1-1988 "Analysis of metallic calcium - Determination of chlorine by the chloride ion selective electrode method" and is incompatible with GB/T 10267.1- Compared with 1988, in addition to structural adjustments and editorial changes,

the main technical changes are as follows:

- a) The determination range of chlorine in "Scope" has been changed (see Chapter 1, Chapter 1 of the 1988 edition);
- b) The pH range in the "Principle" was changed (see Chapter 4, Chapter 2 of the 1988 edition);
- c) The requirements for laboratory water in "Reagents or Materials" have been changed (see Chapter 5, Chapter 3 of the 1988 edition);
- d) Added the relevant content on the use of standard substances/standard samples in "chlorine standard stock solution" (see 5.13);
- e) Added the requirements for sample status in "Sample" (see 7.1);
- f) The description of the relevant content in "Precision" has been changed (see Chapter 10, Chapter 7 of the 1988 edition);
- g) Added the description of "quality assurance and control" (see Chapter 11);

1 Scope

GB/T 10267.1-2025 is the Chinese national standard on methods for analysis of calcium metal - part 1: determination of chlorine by chloride selective electrode 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 1 August 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 February 2026. Classification: ICS 77.120, CCS H 12. 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 the analytical method for the determination of chloride in metallic calcium using a chloride ion selective electrode. This document is applicable to the determination of chlorine in metallic calcium. Determination range. 100µg/g~5000µg/g. Impurity tolerance. Cr, Fe, Al, Ni, Mn and Si are both 1 mg, Cu 4 mg, Mg 6 mg.

2 Normative references

This document has no normative references.

3 Terms and Definitions

There are no terms or definitions that require definition in this document.

4 Principles

The sample was dissolved in water and nitric acid and converted into nitrate. Sodium nitrate solution was used as ionic strength agent at pH 4-8. The chloride ion selective electrode determines the chloride content in the sample.

5 Reagents or materials

Unless otherwise specified, the reagents used in the analysis are all high-grade pure reagents that meet national standards, and the water used for analysis is to meet the conductivity of $\leq 0.10 \text{ mS/m}$ (25 °C) deionized water.

5.1 Nitric acid. $\rho =$

5.2 Sodium hydroxide.

5.3 Sodium nitrate. analytical grade.

5.4 Calcium carbonate. spectrally pure.

5.5 Sodium chloride. spectrally pure. Burn at 500°C~600°C for 40min~50min before use.

5.6 Anhydrous ethanol. analytical grade.

5.7 Nitric acid solution. $\phi(\text{HNO}_3) = 50\%$, prepared from nitric acid (5.1) and water.

5.8 Nitric acid solution. $\phi(\text{HNO}_3) = 5\%$, prepared from nitric acid (5.1) and water.

5.9 Sodium nitrate solution. $c(\text{NaNO}_3) = 5 \text{ mol/L}$. Weigh 212.5 g of sodium nitrate (5.3), dissolve it in water, and dilute to 500 mL with water.

5.10 Sodium hydroxide solution. $\rho(\text{NaOH}) = 200 \text{ g/L}$, prepared by mixing sodium hydroxide (5.2) with water.

5.11 Sodium hydroxide solution. $\rho(\text{NaOH}) = 50 \text{ g/L}$, prepared by mixing sodium hydroxide (5.2) with water.

5.12 Matrix calcium solution. $\rho(\text{Ca}) =$

0.1 g/mL. Weigh 125g of calcium carbonate (5.4) into a 300mL plastic cup, moisten it with water, and slowly add nitric acid solution 1 (5.7) until it is completely dissolved. Cool, transfer to a 500 mL volumetric flask, dilute to the mark with water, and mix well.