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

GB/T 18114.3-2025

Replacing GB/T 18114.3-2010

**Chemical analysis methods for rare earth concentrates - Part 3:
Determination of calcium oxide content**

稀土精矿化学分析方法 第3部分：氧化钙含量的测定

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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 3 of GB/T 18114 "Chemical analysis methods for rare earth concentrates". GB/T 18114 has published the following parts.

- 1. Gravimetric method for determination of the total amount of rare earth oxides;
- 2. Determination of thorium oxide content;
- 3. Determination of calcium oxide content;
- 4. Determination of niobium oxide, zirconium oxide and titanium oxide content - Inductively coupled plasma optical emission spectrometry;
- 5. Determination of aluminum oxide content - Inductively coupled plasma optical emission spectrometry;
- 6. Determination of silicon dioxide content;
- 7. Determination of iron oxide content - Potassium dichromate titration method;
- 8. Determination of rare earth oxide content and proportion;
- 9. Determination of phosphorus pentoxide content;
- 10. Determination of moisture by gravimetric method;
- 11. Determination of fluorine content. This document replaces GB/T 18114.3-2010 "Chemical analysis methods for rare earth concentrates Part 3. Determination of calcium oxide content" and Compared with GB/T 18114.3-2010, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

1 Scope

GB/T 18114.3-2025 is the Chinese national standard on chemical analysis methods for rare earth concentrates - part 3: determination of calcium oxide content, 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 77.120.99, 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 calcium oxide content in rare earth concentrates. This document applies to the determination of calcium oxide content in rare earth concentrates. This document contains three methods. flame atomic absorption spectrometry (method 1), EDTA titration (method 2), inductively coupled plasma Atomic emission spectrometry (Method 3). Method 1 measurement range (mass fraction). 0.50%~3.00%, Method 2 measurement range (mass fraction). 2.00%~20.00%, determination range of method 3 (mass fraction). 0.50%~20.00%. When the determination range of 0.50% to 5.00% in this document overlaps, Method 3 shall be used as the arbitration method; when the determination range is >5.00% to When there is an overlap of 20.00%, Method 2 is used as the arbitration method.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 601 Preparation of standard titration solutions for chemical reagents

GB/T 6379.2 Accuracy (trueness and precision) of measurement methods and results Part 2.Determination of repeatability of standard measurement methods Basic methods of sex and reproducibility

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 8170 Rules for rounding off values and expression and determination of limit values
JJG694 Atomic Absorption Spectrophotometer JJG768 Emission Spectrometer

3 Terms and Definitions

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

4 Flame atomic absorption spectrometry (Method 1)

4.1 Principle The sample was melted and decomposed by sodium hydroxide-sodium carbonate-sodium peroxide, and leached with hot water. The sodium carbonate washing solution was washed and filtered to remove aluminum, silicon, phosphorus, etc. After filtration, the precipitate and filter paper are dissolved with hydrochloric acid and hydrogen peroxide, the filter paper is crushed into pulp, bottled and dried for filtration. Lanthanum and EDTA are added during the determination to eliminate co- The calcium oxide was determined by the standard addition method in an atomic absorption spectrometer using an air-acetylene flame in a hydrochloric acid medium. content.

4.2 Reagents or materials Unless otherwise specified, analytical grade or higher reagents and grade II water that complies with GB/T 6682 should be used in the analysis.