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

GB/T 15617-2025

Replacing GB/T 15617-2002

**Microbeam analysis - Electron probe microanalysis -
Quantitative analysis of silicate minerals**

微束分析 电子探针显微分析 硅酸盐矿物的定量分析

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document replaces GB/T 15617-2002 "Quantitative Analysis Method of Silicate Minerals by Electron Probe", and is consistent with GB/T 15617-2002. Apart from structural adjustments and editorial changes, the main technical changes are as follows:

- a) The terminology has been removed (see Chapter 3 of the 2002 edition);
- b) The selection criteria for standard samples have been changed (see 5.1, 2002 edition of 5.1);
- c) The sample preparation process has been modified (see 6.1, 2002 edition 6.1);
- d) The requirements for the particle size of the minerals to be analyzed have been increased (see 6.2.2);
- e) The content of the sample coating has been changed (see 6.3, 2002 edition of 6.3);
- f) Added measures to handle situations where interference cannot be avoided when analyzing spectral lines (see 7.4.2);
- g) The content of the counting time has been changed (see 7.5, 2002 version 7.5);
- h) Added a note on peak-fixing mode (see 7.6,

6.3 in the 2002 edition);

i) The requirements for selecting the backing position have been changed (see 7.7, 2002 version 7.7);

j) Added the option to select the valence state of elements (see 7.8);

k) Increased error requirements for monitoring standard sample analysis (see 8.4.2);

1 Scope

GB/T 15617-2025 is the Chinese national standard on microbeam analysis - electron probe microanalysis - quantitative analysis of silicate minerals, in the field of chemical technology. 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 29 August 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2026. Classification: ICS 71.040.99, CCS N53. 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 an electron probe microanalysis method for the quantitative analysis of stable natural silicate minerals under electron beam conditions. This document applies to natural silicate minerals, as well as synthetic silicate materials and other oxygen-containing salts, such as phosphates and sulfates. And so on, as well as oxide minerals and materials. This document applies to quantitative analysis using electron probe microanalysis, and also to quantitative analysis using scanning electron microscopes equipped with a spectrometer. analyze.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to this document, only the version corresponding to that date applies. For undated references, the latest version (including all amendments) applies. This document.

GB/T 4930 Technical Specifications for Standard Samples for Electron Probe Microscopy Analysis

GB/T 15074 General Rules for Electron Probe Quantitative Analysis

GB/T 17366 Preparation of Samples for Electron Probe Analysis of Minerals and Rocks

GB/T 20725 Guidelines for Qualitative Point Analysis by Electron Probe Microscopy in

Spectroscopy

GB/T 21636 Electron Probe Microscopy (EPMA) Terminology

GB/T 43889 Guidelines for the Implementation of Quality Assurance Procedures for Electron Probe Microscopes (EPMA)

3 Terms and Definitions

The terms and definitions defined in GB/T 21636 and GB/T 43889 apply to this document.

4. Instruments and auxiliary equipment The instruments and auxiliary equipment are as follows:

- Electron probe microanalyzer or scanning electron microscope with X-ray spectrometer;
- Sample grinding and polishing machines;
- Vacuum spray coating equipment;
- Ultrasonic cleaner;
- Polarizing microscope.

5.1 Principles for Selecting Standard Samples

5.1.1 Standard samples/standard substances (also known as certified reference materials or standards) should be selected. If no suitable standard samples/standard substances are available, follow the guidelines.