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

GB/T 11848.6-2025

Replacing GB/T 11848.6-1989

**Methods for analysis of uranium ore concentrate - Part 6:
Determination of fluoride - Ion-selective electrode method**

铀矿石浓缩物分析方法 第6部分：氟的测定 离子选择性电极法

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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 is Part 6 of GB/T 11848, "Analytical Methods for Uranium Ore Concentrates". GB/T 11848 has already published the following parts.

- 1. Determination of Uranium by Ferrous Sulfate Reduction-Potassium Dichromate Titration;
- 2. Determination of Nitric Acid-Insoluble Uranium by Spectrophotometry;
- 3. Gravimetric determination of extractable organic compounds;
- 4. Determination of Arsenic and Mercury by Hydride Generation-Atomic Fluorescence Spectrometry;
- 5. Determination of Carbonate by Infrared Absorption Spectroscopy;
- 6. Determination of Fluorine by Ion-Selective Electrode Method;
- 7. Determination of Halogens - Volhard Method;
- 8. Determination of Moisture Content by Gravimetric Method;
- 9. Determination of Silicon by Spectrophotometry;
- 10. Determination of Sulfur by Infrared Absorption Spectroscopy;
- 11. Determination of Thorium by Inductively Coupled Plasma Mass Spectrometry;
- 12. Determination of Boron by Inductively Coupled Plasma Mass Spectrometry;

1 Scope

GB/T 11848.6-2025 is the Chinese national standard on methods for analysis of uranium ore concentrate - part 6: determination of fluoride - ion-selective electrode method, in the field of energy and heat transfer engineering. 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 5 October 2025 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2026.

Classification: ICS 27.120.30, CCS F46. 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 determining fluorine in uranium ore concentrates.

This document applies to the determination of fluorine in uranium ore concentrates.

Determination range. 0.0020%~0.250%.

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 documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

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

GB/T 10268 Uranium Ore Concentrates

3 Terms and Definitions

The terms and definitions defined in GB/T 10268 apply to this document.

4.Principles Using uranium octoxide as a catalyst, fluorine in the sample is separated by high-temperature hydrolysis. The resulting hydrogen fluoride is absorbed by sodium hydroxide solution and then treated with ion exchange. Selective electrode determination shows a linear relationship between the logarithm of the fluoride ion concentration in the solution and the electrode potential, thus determining the fluoride content.

5.Reagents or materials Unless otherwise specified, all reagents used were of analytical grade. The water used in the tests met the requirements for Grade II water as specified in GB/T 6682.

5.1 Uranium octoxide, with a fluorine content not exceeding 0.0002%, is used after high-temperature hydrolysis.

5.2 Acetic acid, $\rho=1.05\text{g/mL}$.

5.3 Sodium acetate.

5.4 Acetic acid-sodium acetate buffer solution,

0.1 g/L. Weigh

0.1 g of sodium acetate (5.3) and dissolve it in water, add

0.05 mL of acetic acid (5.2), and dilute with water. Release to 1L.

5.5 Sodium hydroxide.

5.6 Sodium hydroxide solution, $\rho=8\text{g/L}$. Weigh 8g of sodium hydroxide (5.5) and dissolve it in water, then make up to 1L.

6 Determination of Fluorine by Ion-Selective Electrode Method

Warning

---Personnel using this document should have formal laboratory work experience. This document does not cover all possible safety issues. Users are responsible for taking appropriate safety and health precautions and ensuring compliance with relevant national regulations. This document pertains to... Toxic and hazardous waste should be collected and stored centrally, and all types of waste should be managed responsibly in strict accordance with the relevant regulations and technical standards of the national environmental protection administration. Centralized processing.