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

GB/T 11848.2-2025

Replacing GB/T 11848.2-1989

**Methods for analysis of uranium ore concentrate - Part 2:
Determination of nitric acid-insoluble uranium -
Spectrophotometric method**

铀矿石浓缩物分析方法 第2部分：硝酸不溶铀的测定 分光光度法

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and Definitions

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 2 of GB/T 11848, "Analytical Methods for Uranium Ore Concentrates". GB/T 11848 has the following parts published.

- 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 11848.2-2025 is the Chinese national standard on methods for analysis of uranium ore concentrate - part 2: determination of nitric acid-insoluble uranium - spectrophotometric 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 nitric acid-insoluble uranium in uranium ore concentrates. This document applies to the determination of nitric acid-insoluble uranium in uranium ore concentrates, with a determination range of 0.01% to 5%.

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 10268 Uranium Ore Concentrates

3 Terms and Definitions

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

4.Principles The sample was dissolved in 10 mol/L nitric acid solution by heating at 95°C~100°C. The uranium in the insoluble matter reacted with hydrogen peroxide in an alkaline medium. A stable yellow sodium peruranate was generated. Its absorbance was measured at a wavelength of 425 nm, and the uranium content in the insoluble matter was calculated.

5.Reagents or materials Unless otherwise specified, only analytical grade reagents conforming to national standards were used in the analysis. The conductivity of the test water at 25°C was no greater than [value missing].

0.1 mS/m.

5.1 Hydrochloric acid, $\rho=1.19\text{g/mL}$.

5.2 Hydrofluoric acid, $\rho=1.13\text{g/mL}$.

5.3 Hydrogen peroxide, 30% (mass fraction).

5.4 Nitric acid, $\rho=1.42\text{g/mL}$.

5.5 Sulfuric acid, $\rho=1.84\text{g/mL}$.

5.6 Nitric acid solution, $c=10\text{mol/L}$.

5.7 Nitric acid solution, $c=1\text{mol/L}$.

5.8 Sulfuric acid solution, $c=9\text{mol/L}$.

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