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

GB/T 11848.4-2025

Replacing GB/T 11848.4-1989

**Methods for analysis of uranium ore concentrate - Part 4:
Determination of arsenic and mercury - Hydride
generation-atomic fluorescence spectrometry**

铀矿石浓缩物分析方法 第4部分：砷、汞的测定 氢化物发生-原子荧光光谱法

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

- Part 1: Determination of Uranium by Ferrous Sulfate Reduction-Potassium Dichromate Titration;
- Part 2: Determination of Nitric Acid-Insoluble Uranium by Spectrophotometry;
- Part 3: Gravimetric determination of extractable organic compounds;
- Part 4: Determination of Arsenic and Mercury by Hydride Generation-Atomic Fluorescence Spectrometry;
- Part 5: Determination of Carbonate by Infrared Absorption Spectroscopy;
- Part 6: Determination of Fluorine by Ion-Selective Electrode Method;
- Part 7: Determination of Halogens - Volhard Method;
- Part 8: Determination of Moisture Content by Gravimetric Method;
- Part 9: Determination of Silicon by Spectrophotometry;
- Part 10. Determination of Sulfur by Infrared Absorption Spectroscopy;
- Part 11. Determination of Thorium by Inductively Coupled Plasma Mass Spectrometry;
- Part 12. Determination of Boron by Inductively Coupled Plasma Mass Spectrometry;
- Part 14. Determination of Potassium and Sodium by Atomic Absorption Spectrometry;

- Part 15.Determination of Iron, Calcium, Magnesium, Molybdenum, Titanium, Vanadium, and Zirconium by Inductively Coupled Plasma Atomic Emission Spectrometry;

- Part 16.Determination of Phosphorus by Spectrophotometry This document replaces GB/T 11848.4-1989 "Determination of Arsenic in Uranium Ore Concentrates - Diethyldithiocarbamate Photometric Analysis".

Compared with GB/T 11848.4-1989, the main technical changes in the "Law" are as follows, except for structural adjustments and editorial modifications.

- a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 1989 edition);
- b) The experimental principles were changed (see Chapter 4, Chapter 3 of the 1989 edition);
- c) The reagents and materials have been changed (see Chapter 5, Chapter 4 of the 1989 edition);
- d) The experimental procedures were changed (see Chapter 8, Chapter 6 of the 1989 edition);
- e) The formula for calculating experimental data was changed (see Chapter 9, Chapter 7 of the 1989 edition);
- f) Increased requirements for quality assurance and control (see Chapter 11);
- g) The requirements for test reports have been increased (see Chapter 12).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Nuclear Energy Standardization Technical Committee (SAC/TC58).

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The release history of this document and the document it replaces is as follows.

- First published in 1989 as GB/T 11848.4-1989;
- This is the first revision.

Introduction

Uranium ore concentrate is an intermediate product resulting from the processing, purification, and enrichment of uranium ore. It is a primary raw material for the production of nuclear fuel and is mainly used in the energy and defense sectors. GB/T 11848, "Analytical Methods for Uranium Ore Concentrates," describes the chemical analysis of the elemental content in uranium concentrates.

The method is designed to meet the needs of quality arbitration and inspection of uranium ore concentrates.

GB/T 11848 is proposed to consist of fifteen parts.

- Part 1: Determination of Uranium by Ferrous Sulfate Reduction-Potassium Dichromate Titration. The aim is to provide a corresponding detection method for uranium in uranium ore concentrates. Verification method.
- Part 2: Determination of Nitric Acid-Insoluble Uranium by Spectrophotometry. The purpose is to provide a phase-specific method for determining nitric acid-insoluble uranium in uranium ore concentrates.

The testing method should be used.

- Part 3: Determination of Extractable Organic Matter by Gravimetric Method. The purpose is to provide corresponding detection methods for extractable organic matter in uranium ore concentrates. Verification method.
- Part 4: Determination of Arsenic and Mercury by Hydride Generation-Atomic Fluorescence Spectrometry. The aim is to provide information on the determination of arsenic and mercury in uranium ore concentrates.

The corresponding testing methods.

- Part 5: Determination of Carbonate by Infrared Absorption Spectroscopy. The purpose is to provide a corresponding test for carbonate in uranium ore concentrates. method.
- Part 6: Determination of Fluorine by Ion-Selective Electrode Method. The aim is to provide a corresponding method for the determination of fluorine in uranium ore concentrates.
- Part 7: Determination of Halogens. Volhard Method. The aim is to provide a corresponding method for the determination of halogens in uranium ore concentrates.
- Part 8: Determination of Moisture by Gravimetric Method. The purpose is to provide a

corresponding method for the detection of moisture in uranium ore concentrates.

- Part 9: Determination of Silicon by Spectrophotometry. The aim is to provide a corresponding method for the detection of silicon in uranium ore concentrates.
- Part 10: Determination of Sulfur by Infrared Absorption Method. The aim is to provide a corresponding method for the detection of sulfur in uranium ore concentrates.
- Part 11: Determination of Thorium by Inductively Coupled Plasma Mass Spectrometry. The aim is to provide a corresponding detection method for thorium in uranium ore concentrates. Test method.
- Part 12: Determination of Boron by Inductively Coupled Plasma Mass Spectrometry. The aim is to provide a corresponding detection method for boron in uranium ore concentrates. Test method.
- Part 14: Determination of Potassium and Sodium by Atomic Absorption Spectrometry. The purpose is to provide corresponding testing methods for potassium and sodium in uranium ore concentrates. method.
- Part 15: Determination of Iron, Calcium, Magnesium, Molybdenum, Titanium, Vanadium, and Zirconium by Inductively Coupled Plasma Atomic Emission Spectrometry. The aim is to provide...

Corresponding testing methods for iron, calcium, magnesium, molybdenum, titanium, vanadium, and zirconium in uranium ore concentrates.

- Part 16: Determination of Phosphorus by Spectrophotometry. The aim is to provide a corresponding method for the determination of phosphorus in uranium ore concentrates.

Analytical methods for uranium ore concentrates Part 4: Determination of Arsenic and Mercury Hydride generation-atomic fluorescence spectrometry Warning---Personnel using this document should have practical experience working in a formal laboratory. This document does not address all possible safety issues.

Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national regulations. This document covers the following.

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.

1 Scope

This document describes the methods for determining arsenic and mercury in uranium ore concentrates.