Designation: C1843 – 16 (Reapproved 2022)

Standard Test Method for Determining Moisture Content in Uranium-Ore Concentrate[1]

This standard is issued under the fixed designation C1843; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method is used to determine compliance with Specification C967 for the requirements of moisture in uranium ore concentrates (UOC). A procedure is given to determine the approximate temperature for drying the UOC; normally 110 °C but possibly 165 °C for uranyl peroxides. The dried uranium ore-concentrate resulting from this procedure is then used for performing additional analyses described in Specification C967.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are mathematical equivalents that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C859 Terminology Relating to Nuclear Materials

C967 Specification for Uranium Ore Concentrate

C1022 Test Methods for Chemical and Atomic Absorption Analysis of Uranium-Ore Concentrate

C1075 Practices for Sampling Uranium-Ore Concentrate

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

3. Terminology

3.1 Except as otherwise defined herein, definitions of terms are as given in Terminology C859.

4. Summary of Test Method

4.1 The need to establish an appropriate temperature for drying may only occur once for a specific ore concentrate but may be evaluated if the property of the ore is suspected to have changed. An example of a UOC material that may require drying at 165 °C is uranyl peroxide. Other concentrates, such as U_3O_8, UO_2, and UO_3 are generally dried at 110 °C.

4.2 A weighed portion of uranium ore concentrate sample is placed into an oven that is capable of maintaining a temperature of 110 °C or 165 °C. The sample is heated and weighed periodically to a constant weight or an insignificant change in weight.

4.3 A weight change that is insignificant would be defined by the sample size and the required precision.

5. Significance and Use

5.1 The test method within this standard is used to demonstrate uranium ore-concentrate material meets the moisture specification defined in Specification C967 or other applicable requirements.

6. Safety Precautions

6.1 Proper precautions should be taken to prevent inhalation or ingestion of uranium-ore concentrate during ore evaluation, sample preparation, sample analysis, and sample packaging. Precautions used to prevent inhalation or ingestion should include a ventilation system and personal protective equipment. Generally the ventilation system is in the form of laboratory hoods with a dust collection system. Personal protective equipment used should be a respirator designed for particulate matter.

7. Apparatus

7.1 *Drying Oven,* capable of maintaining 110 °C or 165 °C.

7.2 *Desiccator.*

7.3 *Vacuum Pump,* capable of reducing pressure by 34 kPa (5 psi) (25 cm of mercury).

7.4 *Weighing trays.*

[1] This test method is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.05 on Methods of Test.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.