



Standard Test Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Uranium Dioxide Powders and Pellets¹

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1. Scope

1.1 These test methods cover procedures for the chemical, mass spectrometric, and spectrochemical analysis of nuclear-grade uranium dioxide powders and pellets to determine compliance with specifications.

1.2 The analytical procedures appear in the following order:

	Sections
Uranium by Ferrous Sulfate Reduction in Phosphoric Acid and Dichromate Titration Method	2
C1267 Test Method for Uranium By Iron (II) Reduction In Phosphoric Acid Followed By Chromium (VI) Titration In The Presence of Vanadium	3
Uranium and Oxygen Uranium Atomic Ratio by the Ignition (Gravimetric) Impurity Correction Method	4
C1453 Standard Test Method for the Determination of Uranium by Ignition and Oxygen to Uranium Ratio (O/U) Atomic Ratio of Nuclear Grade Uranium Dioxide Powders and Pellets	3
Carbon (Total) by Direct Combustion-Thermal Conductivity Method	2
C1408 Test Method for Carbon (Total) in Uranium Oxide Powders and Pellets By Direct Combustion-Infrared Detection Method	3
Total Chlorine and Fluorine by Pyrohydrolysis Ion-Selective Electrode Method	4
C1502 Standard Test Method for the Determination of Total Chlorine and Fluorine in Uranium Dioxide and Gadolinium Oxide	3
Moisture by the Coulometric, Electrolytic Moisture Analyzer Method	7 – 14
Nitrogen by the Kjeldahl Method	15 – 22 ⁵
Isotopic Uranium Composition by Multiple-Filament Surface Ionization Mass Spectrometric Method	
Spectrochemical Determination of Trace Elements in High-Purity Uranium Dioxide	23 – 30

Silver, Spectrochemical Determination of, by Gallium OxideCarrier D-C Arc Technique	31 and 32
Rare Earths by Copper Spark-Spectrochemical Method	2
Impurity Elements by a Spark-Source Mass Spectrographic Method	2
C761 Test Method for Chemical, Mass Spectrometric, Spectrochemical, Nuclear, and Radiochemical Analysis of Uranium Hexafluoride	3
C1287 Test Method for Determination of Impurities In Uranium Dioxide By Inductively Coupled Plasma Mass Spectrometry	3
Surface Area by Nitrogen Absorption Method	33 – 39
Total Gas in Reactor-Grade Uranium Dioxide Pellets	2
Thorium and Rare Earth Elements by Spectroscopy	2
Hydrogen by Inert Gas Fusion	4
C1457 Standard Test Method for Determination of Total Hydrogen Content of Uranium Oxide Powders and Pellets by Carrier Gas Extraction	3
Uranium Isotopic Analysis by Mass Spectrometry	2
C1413 Test Method for Isotopic Analysis of Hydrolysed Uranium Hexafluoride and Uranyl Nitrate Solutions By Thermal Ionization Mass Spectrometry	3

2. Referenced Documents

2.1 *ASTM Standards*:³

- C753** Specification for Nuclear-Grade, Sinterable Uranium Dioxide Powder
- C761** Test Methods for Chemical, Mass Spectrometric, Spectrochemical, Nuclear, and Radiochemical Analysis of Uranium Hexafluoride
- C776** Specification for Sintered Uranium Dioxide Pellets
- C1267** Test Method for Uranium by Iron (II) Reduction in Phosphoric Acid Followed by Chromium (VI) Titration in the Presence of Vanadium
- C1287** Test Method for Determination of Impurities in Nuclear Grade Uranium Compounds by Inductively Coupled Plasma Mass Spectrometry
- C1347** Practice for Preparation and Dissolution of Uranium Materials for Analysis
- C1408** Test Method for Carbon (Total) in Uranium Oxide Powders and Pellets By Direct Combustion-Infrared Detection Method
- C1413** Test Method for Isotopic Analysis of Hydrolyzed Uranium Hexafluoride and Uranyl Nitrate Solutions by Thermal Ionization Mass Spectrometry
- C1453** Test Method for the Determination of Uranium by

¹ These test methods are under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and are the direct responsibility of Subcommittee C26.05 on Methods of Test.

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² Discontinued January 1999. See C696–80.

³ 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.

⁴ Discontinued September 2011.

⁵ Discontinued as of May 30, 1980.