



Designation: C1462 – 21

# Standard Specification for Uranium Metal Enriched to Less Than 20 % <sup>235</sup>U<sup>1</sup>

This standard is issued under the fixed designation C1462; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

## 1. Scope

1.1 This specification covers nuclear grade uranium metal that has either been processed through an enrichment plant, or has been produced by the blending of highly enriched uranium with other uranium, to obtain uranium of any <sup>235</sup>U mass fraction below 20 % and that is intended for research reactor and generation IV nuclear reactor fuel fabrication. The scope of this specification includes specifications for enriched uranium metal derived from commercial natural uranium, reprocessed uranium, or highly enriched uranium. Commercial natural uranium, reprocessed uranium and highly enriched uranium are defined in Section 3. The objectives of this specification are to define the impurity and uranium isotope limits for commercial grade enriched uranium metal.

1.2 This specification is intended to provide the nuclear industry with a standard for enriched uranium metal which is to be used in the production of research reactor and generation IV nuclear reactor fuel. In addition to this specification, the parties concerned may agree to other appropriate conditions.

1.3 The scope of this specification does not comprehensively cover all provisions for preventing criticality accidents or requirements for health and safety or for shipping. Observance of this standard does not relieve the user of the obligation to conform to all applicable international, federal, state, and local regulations for processing, shipping, or any other way of using uranium metal (see, for example, C996 regarding references).

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered standard.

1.5 *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.*

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.02 on Fuel and Fertile Material Specifications.

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## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- C696 Test Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Uranium Dioxide Powders and Pellets
- C799 Test Methods for Chemical, Mass Spectrometric, Spectrochemical, Nuclear, and Radiochemical Analysis of Nuclear-Grade Uranyl Nitrate Solutions
- C859 Terminology Relating to Nuclear Materials
- C996 Specification for Uranium Hexafluoride Enriched to Less Than 5 % <sup>235</sup>U
- C1233 Practice for Determining Equivalent Boron Contents of Nuclear Materials
- C1295 Test Method for Gamma Energy Emission from Fission and Decay Products in Uranium Hexafluoride and Uranyl Nitrate Solution
- C1347 Practice for Preparation and Dissolution of Uranium Materials for Analysis

### 2.2 ANSI Standard<sup>3</sup>

- ANSI-ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facility Applications

### 2.3 U.S. Government Documents<sup>4</sup>

- Code of Federal Regulations, Title 10, Part 50, (Appendix B)

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 Terms shall be defined in accordance with Terminology C859, except for the following:

3.1.2 *commercial grade enriched uranium metal, n*—uranium metal derived from commercial natural uranium, reprocessed uranium, or uranium obtained from the blending of highly enriched uranium with commercial natural uranium, reprocessed uranium, or depleted uranium.

<sup>2</sup> 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.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

<sup>4</sup> Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, http://www.access.gpo.gov.