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Designation: C996 – 04$^{\varepsilon 1}$

Standard Specification for Uranium Hexafluoride Enriched to Less Than 5 % ^{235}U[1]

This standard is issued under the fixed designation C996; 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.

ε^1 NOTE—The table in Section 5.5 was corrected editorially in September 2004

1. Scope

1.1 This specification covers nuclear grade uranium hexafluoride (UF_6) that either has 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 ^{235}U concentration below 5 % and that is intended for fuel fabrication. The objectives of this specification are twofold: *(1)* To define the impurity and uranium isotope limits for Enriched Commercial Grade UF_6 so that, with respect to fuel design and manufacture, it is essentially equivalent to enriched uranium made from natural UF_6; and *(2)* To define limits for Enriched Reprocessed UF_6 to be expected if Reprocessed UF_6 is to be enriched without dilution with Commercial Natural UF_6. For such UF_6, special provisions, not defined herein, may be needed to ensure fuel performance and to protect the work force, process equipment, and the environment.

1.2 This specification is intended to provide the nuclear industry with a standard for enriched UF_6 that is to be used in the production of sinterable UO_2 powder for fuel fabrication. 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 specification does not relieve the user of the obligation to conform to all applicable international, federal, state, and local regulations for processing, shipping, or in any other way using UF_6 (see, for example, TID-7016, DP-532, and DOE O474.1).

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

C761 Test Methods for Chemical, Mass Spectrometric, Spectrochemical, Nuclear, and Radiochemical Analysis of Uranium Hexafluoride

C787 Specification for Uranium Hexafluoride for Enrichment

C859 Terminology Relating to Nuclear Materials

C1052 Practice for Bulk Sampling of Liquid Uranium Hexafluoride

C1295 Test Method for Gamma Energy Emission from Fission Products in Uranium Hexafluoride and Uranyl Nitrate Solution

C1561 Guide for Determination of Plutonium and Neptunium in Uranium Hexafluoride by Alpha Spectrometry

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

2.2 *ANSI Standards:*[3]

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

ANSI N14.1 Nuclear Materials—Uranium Hexafluoride—Packaging for Transport

2.3 *U.S. Government Documents:*

Inspection, Weighing, and Sampling of Uranium Hexafluoride Cylinders, Procedure for Handling and Analysis of Uranium Hexafluoride, Vol. 1, DOE Report ORO-671-1, latest revision[4]

Nuclear Safety Guide, U.S. NRC Report TID-7016, Rev. 2, 1978

Clarke, H. K., Handbook of Nuclear Safety, DOE Report DP-532 [4]

[1] 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] 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.

[3] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

[4] Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.

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