



Designation: C 1334 – 96 (Reapproved 2000)

Standard Specification for Uranium Oxides with a ^{235}U Content of Less Than 5 % for Dissolution Prior to Conversion to Nuclear-Grade Uranium Dioxide¹

This standard is issued under the fixed designation C 1334; 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 specification covers uranium trioxide (UO_3) or U_3O_8 powders, or mixtures of the two, that are intended for dissolution into uranyl nitrate solution meeting the requirements of Specification C 788 prior to conversion into nuclear grade UO_2 powder with a ^{235}U content of less than 5 %. This specification defines the impurity and uranium isotope limits for such uranium powders that are to be dissolved prior to processing to nuclear grade UO_2 as defined in Specification C 753.

1.2 This specification provides the nuclear industry with a general standard for such uranium oxide powders. It recognizes the diversity of conversion processes and the processes to which such powders are subsequently to be subjected. It is therefore anticipated that it may be necessary to include supplementary specification limits by agreement between the buyer and seller.

1.3 The scope of this specification does not comprehensively cover all provisions for preventing criticality accidents, for health and safety, or for shipping. Observance of this specification does not relieve the user of the obligation to conform to all international, national, state and local regulations for processing, shipping, or any other way of using uranium powders (see 2.2 and 2.3).

2. Referenced Documents

2.1 ASTM Standards:

- C 696 Test Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Uranium Dioxide Powders and Pellets²
- C 753 Specification for Nuclear-Grade, Sinterable Uranium Dioxide Powder²
- C 788 Specification for Nuclear-Grade Uranyl Nitrate Solution²

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 Annual Book of ASTM Standards, Vol 12.01.

C 799 Test Methods for Chemical, Mass Spectrometric, Spectrochemical, Nuclear, and Radiochemical Analysis of Nuclear-Grade Uranyl Nitrate Solutions²

C 859 Terminology Relating to Nuclear Materials²

C 996 Specification for Uranium Hexafluoride Enriched to Less Than 5 % ^{235}U ²

C 1233 Practice for Determining Equivalent Boron Contents of Nuclear Materials²

E 11 Specification for Wire-Cloth Sieves for Testing Purposes³

E 105 Practice for Probability Sampling of Materials³

2.2 ANSI Standard:

ASME NQA-1 Quality Assurance Program, Requirements for Nuclear Facilities⁴

2.3 U.S. Government Document:

Federal Regulations Title 10, (Energy) Part 50, Domestic Licensing of Production and Utilization Facilities⁵

3. Terminology

3.1 Definition of Term Specific to This Standard:

3.1.1 Terms shall be defined in accordance with Terminology C 859, except for the following:

3.1.2 *Commercial Grade Uranium Oxide, n*—uranium trioxide (UO_3), U_3O_8 , or a mixture of the two, made from unirradiated uranium. It is recognized some contamination with reprocessed uranium may occur during routine processing; this is acceptable provided that the specification for Commercial Grade Uranium Oxide as set forth in 4.1 is met.

4. Isotopic Content

4.1 For Commercial Grade Uranium Oxide with an isotopic content of ^{235}U between that of natural uranium and 5 %, the isotopic limits of Specification C 996 shall apply. The specific isotopic measurements required by Specification C 996 may be

³ Annual Book of ASTM Standards, Vol 14.02.

⁴ Available from American National Standards Institute, 11 West 42nd St., 13th Floor, New York, NY 10036.

⁵ Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.