



Designation: ~~C750-03~~ Designation: **C 750 – 09**

Standard Specification for Nuclear-Grade Boron Carbide Powder¹

This standard is issued under the fixed designation C 750; 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 defines the chemical and physical requirements for boron carbide powder intended for a variety of nuclear applications. Because each application has a different need for impurity and boron requirements, three different chemical compositions of powder are specified. In using this specification, it is necessary to dictate which type of powder is intended to be used. In general, the intended applications for the various powder types are as follows:

1.1.1 *Type 1*—For use as particulate material in nuclear reactor core applications.

1.1.2 *Type 2*—Powder that will be further processed into a fabricated shape for use in a nuclear reactor core or used in non-core applications when the powder directly or indirectly may cause adverse effects on structural components, such as halide stress corrosion of stainless steel.

1.1.3 *Type 3*—Powder that will be used for non-core applications or special in-core applications.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

2. Referenced Documents

2.1 *ASTM Standards:*²

~~B329 Test Method for Apparent Density of Powders of Refractory Metals and Compounds by the Scott Volumeter~~

~~C117 Test Method for Material Finer than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing~~ 527 ~~Test Method for Determination of Tap Density of Metallic Powders and Compounds~~

~~B 822 Test Method for Particle Size Distribution of Metal Powders and Related Compounds by Light Scattering~~

~~B 923 Test Method for Metal Powder Skeletal Density by Helium or Nitrogen Pycnometry~~

~~C 371 Test Method for Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders~~

~~C493 Test Method for Bulk Density and Porosity of Granular Refractory Materials by Mercury Displacement~~ ~~Test Method for Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders~~

~~C 791 Test Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Boron Carbide~~

~~C859 Terminology Relating to Nuclear Materials~~⁶ ~~Test Methods for Chemical, Mass Spectrometric, and Spectrochemical Analysis of Nuclear-Grade Boron Carbide~~

~~E 11 Specification for Wire-Cloth Sieves for Testing Purposes~~ ~~Specification for Woven Wire Test Sieve Cloth and Test Sieves~~

~~E 105 Practice for Probability Sampling of Materials~~

2.2 *ANSI Standard:*³

ANSI/ASME NQA-1 Quality Assurance Program Requirements for Nuclear Facilities

2.3 *U.S. Government Document:*⁴

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

3. Terminology

~~3.1 Descriptions of Terms Specific to This Standard~~—Terms shall be defined in accordance with Terminology C859 except for the following:

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

¹ This specification is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.03 on Neutron Absorber Materials Specifications.

Current edition approved July 10, 2003-1, 2009. Published August 2003-2009. Originally approved in 1974. Last previous edition ~~approved in 1997~~2003 as ~~C750-89(1997)~~C 750 – 03.

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*, Vol 02.05, volume information, refer to the standard's Document Summary page on the ASTM website.

³ Annual Book of ASTM Standards, Vol 04.02.

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

⁴ Annual Book of ASTM Standards, Vol 15.02.

⁴ 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>.