



Standard Practice for Thermal Qualification of Type B Packages for Radioactive Material¹

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1. Scope

1.1 This practice defines detailed methods for thermal qualification of “Type B” radioactive materials packages under Title 10, Code of Federal Regulations, Part 71 (10CFR71) in the United States or, under International Atomic Energy Agency Regulation TS-R-1. Under these regulations, packages transporting what are designated to be Type B quantities of radioactive material shall be demonstrated to be capable of withstanding a sequence of hypothetical accidents without significant release of contents.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 *This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire hazard or fire risk assessment of the materials, products, or assemblies under actual fire conditions.*

1.4 *Fire testing is inherently hazardous. Adequate safeguards for personnel and property shall be employed in conducting these tests.*

2. Referenced Documents

2.1 ASTM Standards:²

E176 Terminology of Fire Standards

IEEE/ASTM SI-10 International System of Units (SI) The Modernized Metric System

2.2 Federal Standard:

Title 10, Code of Federal Regulations, Part 71 (10CFR71), *Packaging and Transportation of Radioactive*

Material, United States Government Printing Office, October 1, 2004

2.3 Nuclear Regulatory Commission Standards:

Standard Format and Content of Part 71 Applications for Approval of Packaging of Type B Large Quantity and Fissile Radioactive Material, Regulatory Guide 7.9, United States Nuclear Regulatory Commission, United States Government Printing Office, 1986

Standard Review Plan for Transportation of Radioactive Materials, NUREG-1609, United States Nuclear Regulatory Commission, United States Government Printing Office, May 1999

2.4 International Atomic Energy Agency Standards:

Regulations for the Safe Transport of Radioactive Material, No. TS-R-1, (IAEA ST-1 Revised) International Atomic Energy Agency, Vienna, Austria, 1996

Regulations for the Safe Transport of Radioactive Material, No. ST-2, (IAEA ST-2) International Atomic Energy Agency, Vienna, Austria, 1996

2.5 American Society of Mechanical Engineers Standard:

Quality Assurance Program Requirements for Nuclear Facilities, NQA-1, American Society of Mechanical Engineers, New York, 2001

2.6 International Organization for Standards (ISO) Standard:

ISO 9000:2000, *Quality Management Systems—Fundamentals and Vocabulary*, International Organization for Standards (ISO), Geneva, Switzerland, 2000

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method refer to the terminology contained in Terminology E176 and ISO 13943. In case of conflict, the definitions given in Terminology E176 shall prevail.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *hypothetical accident conditions, n*—a series of accident environments, defined by regulation, that a Type B package must survive without significant loss of contents.

3.2.2 *insolation, n*—solar energy incident on the surface of a package.

¹ This practice is under the jurisdiction of ASTM Committee C26 on Nuclear Fuel Cycle and is the direct responsibility of Subcommittee C26.13 on Spent Fuel and High Level Waste.

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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.