



Designation: E3105 – 17 (Reapproved 2023)

Standard Specification for Permanent Coatings Used to Mitigate Spread of Radioactive Contamination¹

This standard is issued under the fixed designation E3105; 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 is intended to provide a basis for identification of non-removable permanent coatings and fixatives as a long-term measure used to immobilize radioactive contamination, minimize worker exposure, and to protect uncontaminated areas against the spread of radioactive contamination.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser

D4541 Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

3. Terminology

3.1 *Definitions:*

¹ This specification is under the jurisdiction of ASTM Committee E10 on Nuclear Technology and Applications and is the direct responsibility of Subcommittee E10.03 on Radiological Protection for Decontamination and Decommissioning of Nuclear Facilities and Components.

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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.

3.1.1 *contamination, n*—radioactive material in an unwanted location.

3.1.2 *environmental conditions, n*—external factors that may contribute to the performance of the coating, including, but not limited to, temperature, humidity, and ventilation.

3.1.3 *long-term measure, n*—greater than six months.

3.1.4 *lower flammability limit (LFL), n*—the lower end of the concentration range over which a flammable mixture of gas or vapor in air can be ignited at a given temperature and pressure.

3.1.5 *permanent coating, n*—a non-removable, durable film-forming product used to physically or chemically hold or bind radioactive particulate.

3.1.6 *waste acceptance criteria (WAC), n*—the criteria that a material must meet for acceptance in a waste disposal site; these criteria may vary per disposal site.

3.1.7 *working time, n*—the time period between the opening of the material storage container or mixing of components until the prepared material can no longer be successfully applied to a surface.

4. Significance and Use

4.1 Some of these specifications may prove difficult to meet. A product that meets some, but not all, of the performance specifications herein may have value, and this specification may be used as a guide by which to evaluate such products.

4.2 This specification establishes performance specifications for permanent coatings that are intended to immobilize dispersible radioactive contamination deposited on buildings and equipment as might result from anticipated to unanticipated events to include normal operating conditions, decommissioning, and radiological release.

4.3 The coating is intended to be a permanent, non-removable, long-term material used for decommissioning and operations. It is intended to reduce: (1) migration of the contamination into or along buildings, equipment, and other surfaces; (2) resuspension of contamination into the air; and (3) the spread of contamination as a result of external forces such as pedestrian traffic.