



Designation: E3191 – 18

# Standard Specification for Permanent Foaming Fixatives Used to Mitigate Spread of Radioactive Contamination<sup>1</sup>

This standard is issued under the fixed designation E3191; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

## 1. Scope

1.1 This specification is intended to provide a basis for identification of non-removable permanent foaming fixatives as a long-term measure used to immobilize or isolate radioactive contamination, or both, 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:*

**E3105** Specification for Permanent Coatings Used to Mitigate Spread of Radioactive Contamination

**E2420** Guide for Post-Deactivation Surveillance and Maintenance of Radiologically Contaminated Facilities

## 3. Terminology

3.1 *Definitions:*

3.1.1 *complete pouring, n*—pouring of a sufficient volume of a foaming fixative to entirely fill a desired 3-dimensional void space.

<sup>1</sup> This test method 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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3.1.2 *contamination, n*—radioactive material in an unwanted location.

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

3.1.4 *incremental pouring, n*—pouring of fresh material onto a previously applied cured layer of the same material.

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

3.1.6 *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.

3.1.7 *mechanical deterioration, n*—breakdown of the materials mechanical attributes to the point that it is no longer able to retain >95 % of fixated or isolated contamination, or both.

3.1.8 *permanent foaming fixative, n*—a non-removable, durable foaming product capable of filling variable sized regular and irregular 3-dimensional void spaces used to physically isolate or chemically hold or bind radioactive particulate.

3.1.9 *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.

3.1.10 *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 This specification establishes performance specifications for permanent foaming fixatives that are intended to immobilize or isolate, or both, dispersible contamination deposited within a void space as might result from anticipated to unanticipated events to include normal operating conditions, decommissioning, and radiological release.

4.2 The foaming fixative is intended to be a permanent, non-removable, long-term material used for decommissioning and operations. It is intended to isolate the contamination from active working areas. It may also enable reduction in building requirements such as induced airflow or negative air pressure.