



Standard Guide for Application of New Spray Applied Polyurethane Foam and Coated Roofing Systems¹

This standard is issued under the fixed designation D5469/D5469M; 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 (ε) indicates an editorial change since the last revision or reappraisal.

1. Scope

1.1 This guide covers the application of new roofing systems consisting of spray applied polyurethane foam insulation, elastomeric protective coatings, and optional mineral granules. This guide does not apply to retrofit or remedial applications.

1.2 Design criteria associated with the installation of spray in place polyurethane foam are beyond the scope of this specification.

1.3 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.4 *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.*

2. Referenced Documents

2.1 ASTM Standards:²

- [C1029 Specification for Spray-Applied Rigid Cellular Polyurethane Thermal Insulation](#)
- [D451 Test Method for Sieve Analysis of Granular Mineral Surfacing For Asphalt Roofing Products](#)
- [D1079 Terminology Relating to Roofing and Waterproofing](#)
- [D4442 Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials](#)
- [D7119 Guide for Sampling Spray Polyurethane Foam and Coating in Roofing](#)

¹ This guide is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.06 on Spray Polyurethane Foam Roof Systems.

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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.

2.2 Other Standard:

[SSPC SP-6 Steel Structures Painting Council](#)³

2.3 Spray Polyurethane Foam Alliance Documents:⁴

[AY-102 Guide for Selection of Protective Coatings Over Spray Polyurethane Foam Roofing Systems](#)

[AY-104 Spray Polyurethane Foam Roofing Systems for New and Remedial Roofing](#)

[AY-118 Moisture Vapor Transmission](#)

[NRCA Roofing and Waterproofing Manual, Spray Polyurethane Foam-Based Roofing Manual](#)

[NRCA/SPFA Quality Control Guidelines for the Application of Spray Polyurethane Foam Roofing](#)

[NRCA/SPFA Manual for Inspection and Maintenance of Spray Polyurethane Foam-Based Roof Systems, A Guide for Building Owners](#)

2.4 Other Documents:

[Underwriters Laboratories, Roofing Materials and Systems Directory](#)⁵

[Factory Mutual Research Corporation, Loss Prevention Data Sheets 1–28](#)⁶

[Alliance for the Polyurethane Industry AX119 Guide for the Safe Handling and Use of Polyurethane and Polyisocyanurate Foam Systems](#)⁴

NOTE 1—*Details:* Numerous details are found in the referenced documents, in foam and coating manufacturers literature, and from other sources. These details are to be considered general in nature. They should not be used without modification to allow for movement between the building, roofing, roof top equipment, and roof drainage systems.

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology D1079.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 **Figs. 1-6** show the various types of polyurethane foam surfaces.

³ Available from Society for Protective Coatings (SSPC), 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656.

⁴ Available from Spray Polyurethane Foam Alliance, 1300 Wilson Boulevard, Suite 800, Arlington, VA 22209.

⁵ Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

⁶ Available from Factory Mutual Research Corporation, 1151 Boston-Providence Tpke., Norwood, MA 02062.

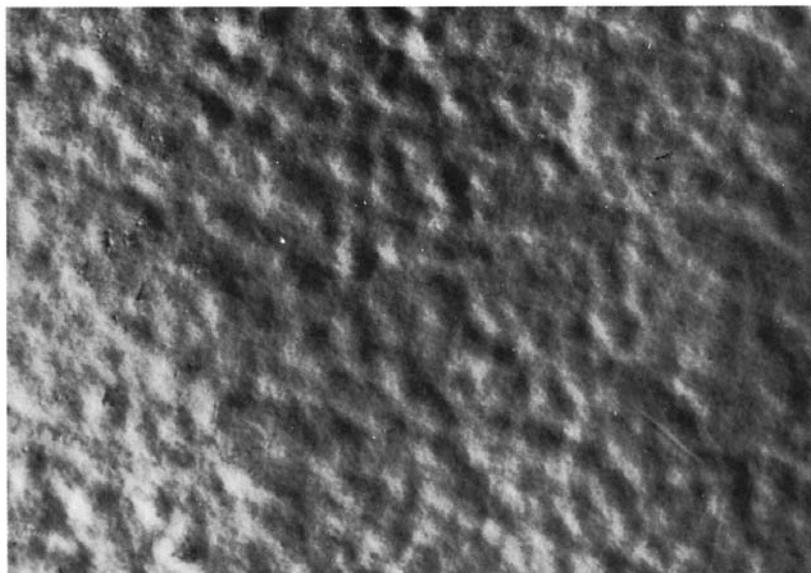


FIG. 1 Polyurethane Foam Texture—Smooth

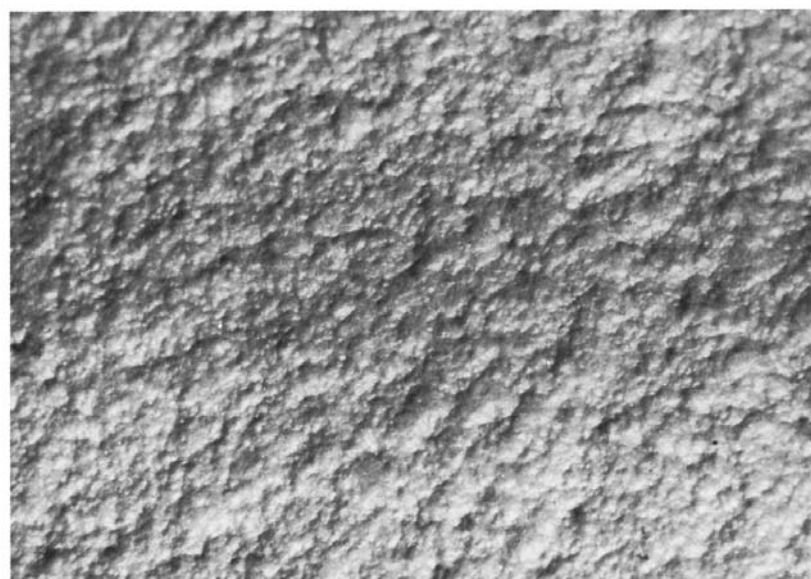


FIG. 2 Polyurethane Foam Texture—Orange Peel

3.2.2 *coarse orange peel surface*—a surface of spray applied polyurethane foam that is slightly rough, having irregularities that form obtuse angles with the plane of the surface.

3.2.3 *core samples*—cylindrical sections of approximately 50 to 75 mm [2 to 3 in.] diameter. They shall be cut using a round metal template or coring tool, and they shall extend from surface down to substrate.

3.2.4 *lift*—a single application of spray applied polyurethane foam.

3.2.5 *lightweight or insulating concrete fill*—concrete made with or without aggregate additions to portland cement, water,

and air to form a hardened material which, when oven dried, will have a unit weight of 800 kg/m^3 [50 lb/ft^3] or less.

3.2.6 *orange peel surface*—a surface of spray applied polyurethane foam that is relatively smooth, but has a slightly rippled or dimpled appearance.

3.2.7 *popcorn surface*—a surface of spray applied polyurethane foam that is extremely rough, having irregularities that form angles which are perpendicular to the plane of the surface.

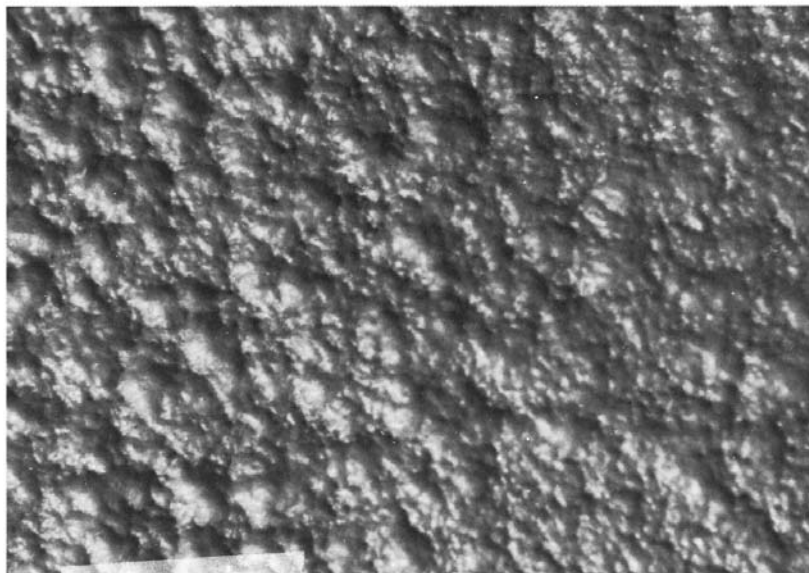


FIG. 3 Polyurethane Foam Texture—Coarse Orange Peel

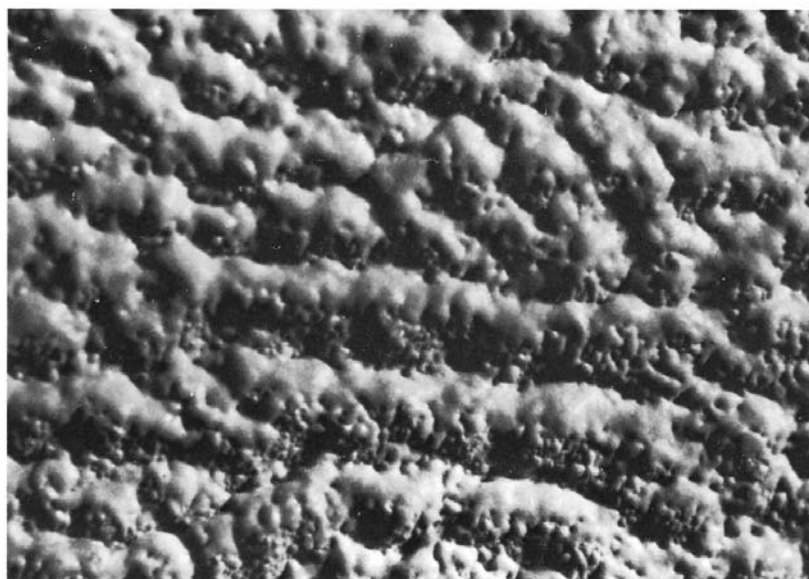


FIG. 4 Polyurethane Foam Texture—Rippling Verge of Popcorn

3.2.8 *verge of popcorn surface*—a surface of spray applied polyurethane foam that is moderately rough, but does not exhibit sharp angles perpendicular to the plane of the surface.

3.2.9 *slit samples*—crescent-shaped samples approximately 25 mm [1 in.] long and 12.5 mm [$\frac{1}{2}$ in.] in depth. They are used to check coating surface quality and coating adhesion and thickness.

3.2.10 *smooth surface*—a surface of spray applied polyurethane foam that is relatively smooth.

3.2.11 *tree bark surface*—a surface of spray applied polyurethane foam that is extremely rough and irregular, having undercuts (upper surface of foam overhangs a lower surface) and usually accompanied by pinholes.

4. Significance and Use

4.1 This guide outlines general procedures and precautions necessary for correct and safe application of spray applied polyurethane foam roofing systems.

4.2 This guide is not all-inclusive; this guide is intended only to supplement detailed instructions from manufacturers and safety requirements established by law.

4.3 Refer to Polyurethane Foam Contractors Alliance AY-104 and NRCA Spray Polyurethane Foam-Based Manual for industry guidelines.

5. Substrate Requirements

5.1 General Requirements:



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