



Designation: D6083/D6083M – 21

Standard Specification for Liquid-Applied Acrylic Coating Used in Roofing¹

This standard is issued under the fixed designation D6083/D6083M; 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 covers liquid-applied water-dispersed acrylic latex elastomeric protective roof coatings.

1.2 This specification does not provide guidance for application.

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

1.5 *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

[D16 Terminology for Paint, Related Coatings, Materials, and Applications](#)

[D471 Test Method for Rubber Property—Effect of Liquids](#)

[D522/D522M Test Methods for Mandrel Bend Test of Attached Organic Coatings](#)

[D624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers](#)

[D903 Test Method for Peel or Stripping Strength of Adhesive Bonds](#)

¹ This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.09 on Bituminous Emulsions.

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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.

[D1079 Terminology Relating to Roofing and Waterproofing](#)

[D1644 Test Methods for Nonvolatile Content of Varnishes](#)

[D1653 Test Methods for Water Vapor Transmission of Organic Coating Films](#)

[D2196 Test Methods for Rheological Properties of Non-Newtonian Materials by Rotational Viscometer](#)

[D2370 Test Method for Tensile Properties of Organic Coatings](#)

[D2697 Test Method for Volume Nonvolatile Matter in Clear or Pigmented Coatings](#)

[D4798/D4798M Practice for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials \(Xenon-Arc Method\)](#)

[G21 Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi](#)

3. Terminology

3.1 For definitions of terms used in this specification, see Terminologies [D16](#) and [D1079](#).

4. Classification

4.1 Type I and Type II are defined by the liquid physical properties in [Table 1](#) and cured film physical properties in [Table 2](#).

5. Materials and Manufacture

5.1 *Composition*—The product, as manufactured, shall be in liquid form for application to the roof surface by brushing, squeegeeing, rolling, or spraying. The product shall be composed of a water-based acrylic latex elastomeric emulsion polymer, to which various pigments and other additives have been added to give the required physical properties.

6. Liquid and Cured Film Physical Properties

6.1 Although the product is supplied as a liquid, its performance is based on the functional properties of the cured material in film form. The coating is formed into a film adhered to the substrate.

6.2 *Liquid Physical Property Requirements*—The liquid coating shall comply with the property requirements in [Table 1](#).

6.3 *Cured Film Physical Property Requirements*—The cured film shall comply with the requirements listed in [Table 2](#).



TABLE 1 Liquid Physical Property Requirements

Physical Property	ASTM Designation	Requirements	
		Type I	Type II
Viscosity	D2196	12 to 85 Pa·s [12 000 to 85 000 cps]	0.2 to 100 Pa·s [200 to 100 000 cps]
Volume solids	D2697	≥50 %	≥45 %
Weight solids	D1644	≥60 %	≥50 %

7. Test Methods

7.1 *Specimen Preparation*—Prepare coating films by applying two coats, with a minimum of 4 h drying period between coats, to a suitable release surface so film will not tear upon removal (see Test Method D2370) to give a total dry mil thickness of 0.50 ± 0.05 mm [0.02 ± 0.002 in.]. The film is allowed to thoroughly cure at 23 ± 2 °C [73.4 ± 3.6 °F] and 50 ± 10 % relative humidity for 336 ± 12 h. The film shall be removed from the release paper and turned over after the first 168 h to allow for complete curing.

7.2 *Elongation and Tensile Strength (Test Method D2370):*

7.2.1 Test conditions: 23 ± 2 °C [73.4 ± 3.6 °F] at 50 ± 10 % RH.

7.2.2 Cut specimen measuring 75 mm [3 in.] long by 13 mm [0.5 in.] ± 10 % wide.

7.2.3 *Test Type or Functional Equivalent:*

Cross head speed	25 ± 0.5 mm/min [1.0 in./min]
Gage length	25 ± 0.5 mm [1.0 in.]

7.3 *Accelerated Weathering (Practice D4798/D4798M):*

Cycle employed	A
Uninsulated black panel temperature	63 ± 3 °C
Filter	Daylight filter
Total radiant energy (minimum)	1260 kJ/(m ² ·nm) at 340 nm 151.2 MJ/m ² at 300 to 400 nm (1000 h at the irradiance level of 0.35 W/(m ² ·nm) at 340 nm specified in Practice D4798/D4798M)

7.4 *Permeance (Test Methods D1653)*—A 0.5 mm [0.02 in.] ± 10 % film shall be used.

7.4.1 Test conditions: 23 ± 2 °C [73.4 ± 3.6 °F] at 50 ± 10 % RH.

7.4.2 Test is run in the inverted position with water in contact with the film.

7.4.3 Value is reported in SI and inch-pound units.

7.5 *Water Swelling (Test Method D471)*—The test shall be conducted at 23 ± 2 °C [73.4 ± 3.6 °F] using a 0.5 mm

[0.020 in.] ± 10 % film submerged in distilled water for a period of 168 ± 4 h. At that time, the weight value is determined.

7.6 *Adhesion to Specified Substrate (Test Method D903):*

7.6.1 Cross head speed 50 mm/min [2 in./min].

7.6.2 Specimens are prepared by brush applying two coats to a galvanized panel substrate (unless otherwise specified) with the cloth strip (in accordance with Test Method D903) embedded between the coats to give a total dry film thickness of 0.5 mm [0.02 in.] ± 10 %. The panels are allowed to dry for 336 ± 12 h at 23 ± 2 °C [73.4 ± 3.6 °F] and 50 ± 10 % relative humidity prior to testing for wet adhesion. If a primer is specified, it shall be applied per the manufacturer's or supplier's direction.

7.6.3 Specimens shall be submerged for 168 ± 6 h in tap water at 23 ± 2 °C [73.4 ± 3.6 °F] prior to testing for wet adhesion. Samples are tested immediately after soaking.

7.7 *Tear Resistance (Test Method D624)*—Die C.

7.8 *Low-Temperature Flexibility (Test Method D522/D522M, Method B)*—Apply product at uniform thickness to aluminum substrate to result in a dry film thickness of 0.36 mm [0.014 in.] ± 10 % and allow to cure 72 h at 23 ± 2 °C [73.4 ± 3.6 °F] and 50 ± 10 % relative humidity followed by 120 h at 50 °C [122 °F] prior to testing.

7.9 *Viscosity (Test Method D2196)*—Test specimen with Brookfield LVT Viscometer No. 4 spindle, 6 RPM.

8. Inspection

8.1 Inspection of the material shall be as agreed by involved parties.

9. Rejection and Resubmittal

9.1 Failure to conform to any one of the requirements prescribed in this specification shall constitute grounds for rejection. The seller shall have the right to reinspect the rejected shipment and resubmit the lot after removal of those packages not conforming to the specified requirements.

10. Packaging and Materials

10.1 Shipping containers shall be marked with the name of the material, the stock number, lot number, ASTM designation number, type, and year of issue, quantity therein, shelf-life date, and the name of the manufacturer or supplier.

11. Keywords

11.1 acrylic; elastomeric coating; roof