



Designation: ~~D6083/D6083M—18~~ D6083/D6083M – 21

Standard Specification for ~~Liquid Applied~~ 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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 ~~non-conformance~~ 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

- ~~E794 Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants~~
- ~~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~~
- ~~D562 Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer~~
- ~~D624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers~~
- ~~D903 Test Method for Peel or Stripping Strength of Adhesive Bonds~~
- ~~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~~

¹ This ~~test method 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.

- 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**.

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.

TABLE 1 Liquid Physical Property Requirements

Physical Property	ASTM Designation	Requirements	
		Type I	Type II
Viscosity	D562–D2196	85 to 141 KU	85 to 141 KU
		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	greater than 50 %	greater than 45 %
Weight solids	D1644	greater than 60 %	greater than 50 %

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 %



TABLE 2 Cured Film Physical Property Requirements

Physical Property	ASTM Designation	Requirement	
		Type I	Type II
Initial percent elongation (break)	D2370	minimum 100 % 23°C [73°F]	minimum 100 % 23°C [73°F]
Initial percent elongation (break)	D2370	minimum 100 % 23 °C [73 °F]	minimum 100 % 23 °C [73 °F]
Initial tensile strength (maximum stress)	D2370	minimum 1.4 MPa [200 psi] 23°C [73°F]	minimum 1.4 MPa [200 psi] 23°C [73°F]
Initial tensile strength (maximum stress)	D2370	minimum 1.4 MPa [200 psi] 23 °C [73 °F]	minimum 1.4 MPa [200 psi] 23 °C [73 °F]
Final percent elongation (break) after accelerated weathering 1000 h	D2370	minimum 100 % at 23°C [73°F]	minimum 100 % at 23°C [73°F]
Final percent elongation (break) after accelerated weathering 1000 h	D2370	minimum 100 % at 23 °C [73 °F]	minimum 100 % at 23 °C [73 °F]
Permeance	D1653	maximum 2875 ng [Pa·s·m ²] [50 perms]	maximum 2875 ng [Pa·s·m ²] [50 perms]
Water swelling	D471	maximum 20 % (mass)	maximum 20 % (mass)
Accelerated weathering 1000 h	D4798/D4798M	No cracking or checking	No cracking or checking
Accelerated weathering 1000 h	D4798/D4798M	no cracking or checking	no cracking or checking
Adhesion	G794		
Adhesion	D903	minimum 350 N/m [2.0 pli] wet	minimum 350 N/m [2.0 pli] wet
Fungi resistance	G2+	Zero rating	Zero rating
Fungi resistance	G21	zero rating	zero rating
Tear resistance	D624	>21.0 kN/m [60 lbf/in.]	>21.0 kN/m [60 lbf/in.]
Low temperature flexibility after 1000 h accelerated weathering	D522/D522M	minimum pass 13 mm [0.5 in.] mandrel -26°C [-15°F]	minimum pass 13 mm [0.5 in.] mandrel -10°C [14°F]
Low temperature flexibility after 1000 h accelerated weathering	D522/D522M	minimum pass 13 mm [0.5 in.] mandrel -26 °C [-15 °F]	minimum pass 13 mm [0.5 in.] mandrel -10 °C [14 °F]

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](#)):

<https://standards.iteh.ai/catalog/standards/sist/78edd762-7893-461b-ac05-42dac1d21f62/astm-d6083-d6083m-21>

Cycle employed	A
Uninsulated black panel temperature	63 ± 3°C
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 Test Method D4798/ D4798M)
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.