



Designation: D1970-01 Designation: D 1970 – 08

Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection¹

This standard is issued under the fixed designation D 1970; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers polymer modified bituminous sheet materials intended for use as underlayment on roof eaves, or valleys, or both, to prevent leakage of shingle, tile, or metal roofs from water back-up due to ice dams.

1.2 These underlayment sheets have a sticky adhesive layer which is exposed by removal of a protective sheet. The top surface is suitable to work on during the application of the exposed roofing.

~~1.3 The values stated in SI units are to be regarded as standard.~~

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 The following safety hazards caveat pertains to the test methods portion, Section 7, of this standard. *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

~~D 228 Test Methods for Asphalt Roll Roofing, Cap Sheets, and Shingles— Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cap Sheets, and Shingles Used in Roofing and Waterproofing~~

D 903 Test Method for Peel or Stripping Strength of Adhesive Bonds

~~D 1079 Terminology Relating to Roofing, Waterproofing, and Bituminous Materials²— Terminology Relating to Roofing and Waterproofing~~

D 1204 Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature

D 2523 Practice for Testing Load-Strain Properties of Roofing Membranes

D 4073 Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes

D 5147 Test Methods for Sampling and Testing Modified Bituminous Sheet Material

E 96/E 96M Test Methods for Water Vapor Transmission of Materials

3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminology D 1079.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *lot*—for the purpose of sampling, a lot shall consist of all material manufactured in one production run (not to exceed 24 h) using the same source of raw materials.

4. Workmanship, Finish, and Appearance

4.1 The underlayment sheet shall be supplied in roll form.

4.2 The underlayment sheet shall be substantially uniform in thickness and appearance. It shall be free of visible defects such

¹This specification is under the jurisdiction of ASTM Committee D08 on Roofing, Waterproofing, and Bituminous Materials and is the direct responsibility of Subcommittee D08.02 on Prepared Roofings, Shingles, and Siding Materials.

Current edition approved Sept. 10, 2001. Published November 2001. Originally published as D1970-90. Last previous edition D1970-00.

¹ This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.02 on Prepared Roofings, Shingles and Siding Materials.

Current edition approved May 1, 2008. Published May 2008. Originally approved in 1990. Last previous edition approved in 2001 as D 1970 – 01.

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* Vol 04.04, volume information, refer to the standard's Document Summary page on the ASTM website.

as holes, ragged or untrue edges, breaks, cracks, tears, protuberances, and indentations, except for those perforations or protuberances which are intentional.

4.3 The surface of the underlayment sheet shall be designed to provide traction and slip resistance to the applicator.

NOTE 1—The intent of 4.3 is to recognize that surface slipperiness is important when working on a roof and, while no test method is specified in this standard, several methods for assessing the relative slipperiness of surfaces are available. It is the further intent of this paragraph to ensure that, whatever method is used, the friction coefficient or resistance to slipping of the surface of these products should be at least as great as asphalt-saturated felt shingle underlayment tested under the same conditions of temperature and wetness as agreed between purchaser and seller.

4.4 Sheet sections shall be suitable for joining by the manufacturer's recommended procedure. The entire lower surface of the underlayment sheet shall be capable of being fully adhered to the roof deck.

5. Physical Requirements

5.1 The underlayment sheet shall conform to the physical requirements prescribed in Table 1.

5.2 The underlayment sheet shall not crack nor be so sticky as to cause tearing or other damage upon being unrolled at material temperatures between 4.4 and 60°C (40 and 140°F).

6. Sampling

6.1 From each lot of underlayment sheet, select sample rolls in accordance with Test Methods D 228.

6.2 The rolls so selected shall constitute the representative sample used for all subsequent observations and tests pertaining to the lot of material being examined.

7. Test Methods

7.1 *Conditioning*— Unless otherwise specified, condition test specimens for at least 4 h at $23 \pm 2^\circ\text{C}$ ($73.4 \pm 3.6^\circ\text{F}$) and $50 \pm 5\%$ relative humidity prior to testing.

7.2 *Thickness*:

7.2.1 Measure the thickness of the shingle underlayment in accordance with Test Methods D 5147.

7.2.2 Report the number of measurements, the average and standard deviation across the sheet.

7.3 *Maximum Load and Elongation at Break*—This test method covers the determination of the maximum load and elongation at break of the underlayment sheets, as set forth in Practice D 2523 except as noted below.

7.3.1 *Specimens*:

7.3.1.1 Prepare five specimens from each sample roll in both the longitudinal and transverse directions. Specimens shall be 25 mm (1 in.) $\pm 5\%$ wide by a minimum of 150 mm (6 in.) $\pm 5\%$ long. For materials with high elongation the length of the sample may be reduced to 100 mm (4 in.) $\pm 5\%$ if necessary to avoid limitations imposed by dimensions of the test machine.

7.3.2 *Procedure*:

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<https://standards.iteh.ai/catalog/standards/sist/8d802435-a662-4af6-a2e6-61e10b7d0317/astm-d1970-08>

TABLE 1 Physical Requirements of Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

Property	SI	Inch-Pound
Thickness, min	1.0 mm	40 mils
Maximum load, min		
Longitudinal	4.4 kN/m	25 lbf/in.
Transverse	4.4 kN/m	25 lbf/in.
Elongation at break, min of modified bitumen portion		10 %
Adhesion to plywood, min at 40°F	0.92 kgf/30.5 cm	2.0 lbf/ft width
Adhesion to plywood, min at 75°F	5.44 kgf/30.5 cm	12.0 lbf/ft width
Thermal stability, max	3 mm	0.1 in.
Flexibility temperature	-29°C	-20°F
Tear resistance		
Longitudinal, min	89 N	20 lbf
Transverse, min	89 N	20 lbf
Moisture vapor permeance, max	5.7 ng/Pa.S.M. ²	0.1 U.S. Perms
Sealability around nail		pass
Waterproof integrity after low temperature flexibility		pass
Waterproof integrity of lap seam		pass
Slip resistance		Greater than asphalt saturated felt when tested under the same conditions of temperature and wetness (see Note 1)