Project Manager/Estimator Meeting
Oglebay Resort, Wheeling, WV
March 24, 2023

Emerging Technical Issues and Risks

Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association
Rosemont, Illinois

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Market condition update

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Media Contact
Amie Goscinski, ARMA Director of MarComm
443.640.1075 x1144 | agoscinski@asphaltroofing.org

ARMA Releases 2022 Q4 Report on Asphalt Roofing Product Shipments

2020: 161,416,435
2019: 146,605,438
2018: 143,453,436
2017: 151,098,256

Asphalt Roofing Product Shipments

Shipments (squares)	Q4 2022	Q4 2021	% Change	YTD 2022	YTD 2021	% Change
Shingles – U.S. (including individual shingles)	29,865,538	37,014,634	-19.3%	157,749,481	169,188,143	-6.8%
BUR base, ply, and mineral cap sheets – U.S. (not including saturated felts)	1,398,161	1,344,956	4.0%	7,055,363	6,587,255	7.1%
Modified Bitumen – U.S.	8,040,453	8,930,779	-10.0%	38,996,142	39,805,747	-2.0%
Shingles – Canada (including Individual shingles)	1,569,610	2,917,763	-46.2%	12,109,765	14,215,825	-14.8%

About ARMA:
The Asphalt Roofing Manufacturers Association (ARMA) is a trade association representing North America's asphalt roofing manufacturing companies and their raw material suppliers. The association includes the majority of North American manufacturers of asphalt shingles and asphalt low slope roof membrane systems. Committed to advances in the asphalt roofing industry, ARMA is proud of the role it plays in promoting asphalt roofing to those in the building industry and to the public.

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1. Stability. Although new technologies have entered the roofing industry, the core business is extraordinarily stable. New properties will need roofs. Roofs will wear out and need to be replaced. Contractors will utilize qualified crews to install roofing. Properties will as a result be protected from the weather.
2. Growth.Two major factors fuel future progress. Over time, the expanding U.S. economy based on productivity and increased population drives industry revenues. Additionally, the trend of more severe weather results in even more roof repairs and replacements.
3. Large. The U.S. roofing industry is estimated to be more than $55 billion and growing.
4. Profitable. The industry's average return on assets is estimated at 8% and average return on equity of about 20%! For perspective, that means investor profits double every 3.5 years!
5. Fragmented. The 15 largest roofing companies represent less than 5% of total U.S. industry sales! In most industries, the 10% largest companies represent over 50% of the market share.

Link

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Market Index
Survey for
REROOFING
CFFA
CRCA
ERA
IBEC
MCA
NRCA
NWIR
PIMA
RCMA
SPRI

Link

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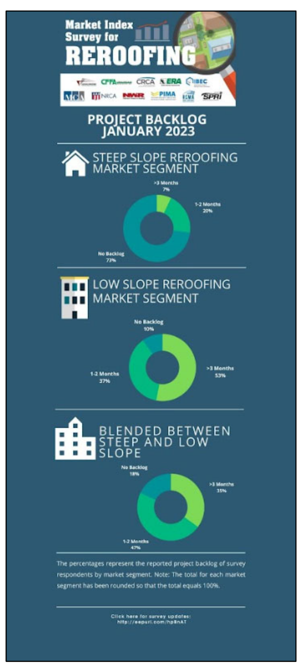
Market Index
Survey for
REROOFING
CUSTOMER INQUIRIES INDEX
Q4 2022
STEEP SLOPE REROOFING
MARKET SEGMENT
Q4 2022
43.8
Q3 2022
48.1
LOW SLOPE REROOFING
MARKET SEGMENT
Q4 2022
58.6
Q3 2022
60.6
BLENDED BETWEEN
STEEP AND LOW
SLOPE
Q4 2022
57.7
Q3 2022
63.5
The index is equal to the percent indicating that customer inquiries have increased when compared to the same quarter of the previous year, plus one half who have reported no change. The total is multiplied by 100 to create the index. A score of 50 or higher suggests expansion or optimism, while a value below 50 indicates contraction or pessimism.
Click here for survey updates:
http://eepurl.com/hp8nAT


Market Index
Survey for
REROOFING
PROJECT BACKLOG
JANUARY 2023
STEEP SLOPE REROOFING
MARKET SEGMENT
>3 Months
7%
1-2 Months
20%
No Backlog
73%
LOW SLOPE REROOFING
MARKET SEGMENT
No Backlog
10%
1-2 Months
37%
>3 Months
53%
BLENDED BETWEEN
STEEP AND LOW
SLOPE
No Backlog
18%
>3 Months
35%
1-2 Months
47%
The percentages represent the reported project backlog of survey respondents by market segment. Note: The total for each market segment has been rounded so that the total equals 100%.
Click here for survey updates:
http://eepurl.com/hp8nAT


Market Index
Survey for
REROOFING
PROJECT CONTRACTS INDEX
Q4 2022
STEEP SLOPE REROOFING
MARKET SEGMENT
Q4 2022
43.3
Q3 2022
42.0
LOW SLOPE REROOFING
MARKET SEGMENT
Q4 2022
58.9
Q3 2022
65.5
BLENDED BETWEEN
STEEP AND LOW
SLOPE
Q4 2022
53.8
Q3 2022
62.8
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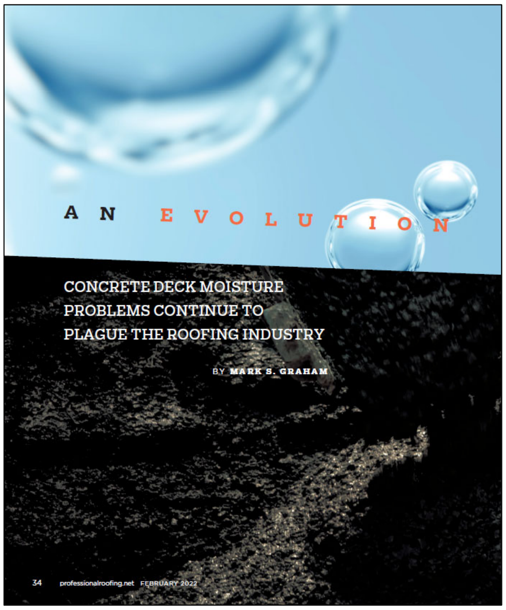
Participate in the quarterly survey…

9

Moisture-related issues with concrete roof decks

10



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Professional Roofing
February 2022

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NRCA recommends designers specify an adhered vapor retarder…
but isn't adhesion of the vapor retarder still a concern?

12

Vapor retarder adhesion testing

Moisture-related issues with concrete roof decks

13

What we tested…

Vapor retarder adhesion testing

- 2-ply asphalt BUR membrane
- Manufacturer A-SA vapor retarder
- Manufacturer B-SA vapor retarder
- Manufacturer C-SA vapor retarder
- Manufacturer D-SA vapor retarder

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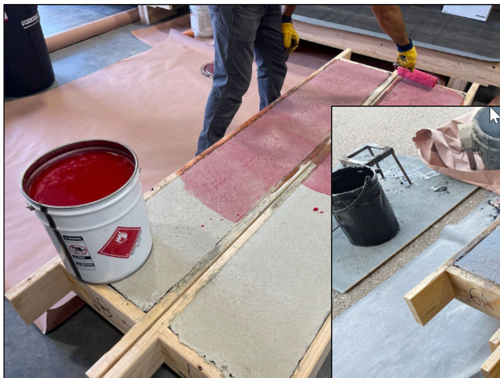

28-day cure

15

Sample conditioning

After vapor retarder application; 28 days after concrete placement

- Conditioned for 60-days
- One set of each at standard laboratory conditions
- Other set of each at a 30 F temperature differential
  - The temperature differential creates an upward vapor pressure drive

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Test results

Vapor retarder adhesion

Sample	Tested pull resistance		Difference	
	Lab. conditions 60-day conditioning (Average of 5 specimens)	Vapor drive 60-day conditioning (Average of 5 specimens)	Differential	Percent differential
2-ply built-up membrane	1,421 psf	833 psf	-588 psf	-41%

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Conclusions

Vapor retarder adhesion

- Results vary
- For 4 of 5 samples, vapor drive conditioning resulted in lower values, but Manufacture 3-SA VR is higher
- All results greater than 90 psf (i.e., FM 1-90)

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Recommendations

Vapor retarder adhesion

- Designers should specify vapor retarders after considering vapor retarder adhesion both at the time of application and in-service.
- Manufacturers should incorporate some form of vapor drive conditioning assessment in their product development and assessment, and make that information available to specifiers.
- The vapor drive conditioning used in this testing is one possible assessment method.

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RESEARCH+TECH

Better understanding of adhesion

Recent research shows vapor retarder adhesion to new concrete roof decks varies

by Mark S. Graham

In "An evolution of knowledge," February 2022 issue, I discussed NRCA's research examining roofing-related problems with moisture in concrete roof decks. One area where NRCA considered additional research to be necessary was addressing the adequacy of vapor retarder adhesion to newly placed concrete roof decks.

NRCA has since undertaken this research, which provides designers with some guidance for proper vapor retarder selection.

Adhesion research

NRCA contracted with SRI Consultants Inc., Waunakee, Wis., to oversee test specimen preparation and conduct vapor retarder adhesion testing.

Ten 6-inch-thick concrete roof deck specimen sets were poured using normal-weight structural concrete. The top surfaces of the concrete specimens were float-finished.

After 28 days of curing at standard laboratory conditions, a two-ply built-up membrane was applied to two of the concrete roof deck specimens and four different manufacturers' self-adhering vapor retarder products were applied to the remaining concrete roof deck specimens in two specimens sets. For each of the self-adhering vapor retarder types, the manufacturer's recommended primer was used, and installations

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March 2023

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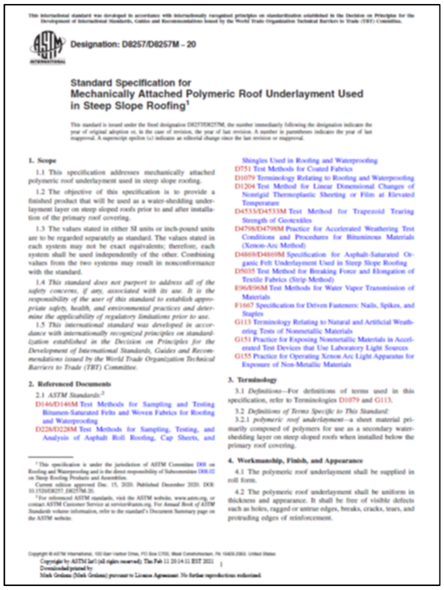
Synthetic underlayment

22



Designation: D8257/D8257M – 20

Standard Specification for
Mechanically Attached Polymeric Roof Underlayment Used
in Steep Slope Roofing[1]

ASTM D8257, “Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing”

Published in December 2020

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Designation: D8257/D8257M – 20

Standard Specification for
Mechanically Attached Polymeric Roof Underlayment Used
in Steep Slope Roofing[1]

1. Scope

1.1 This specification addresses mechanically attached polymeric roof underlayment used in steep slope roofing.

1.2 The objective of this specification is to provide a finished product that will be used as a water-shedding underlayment layer on steep sloped roofs prior to and after installation of the primary roof covering.

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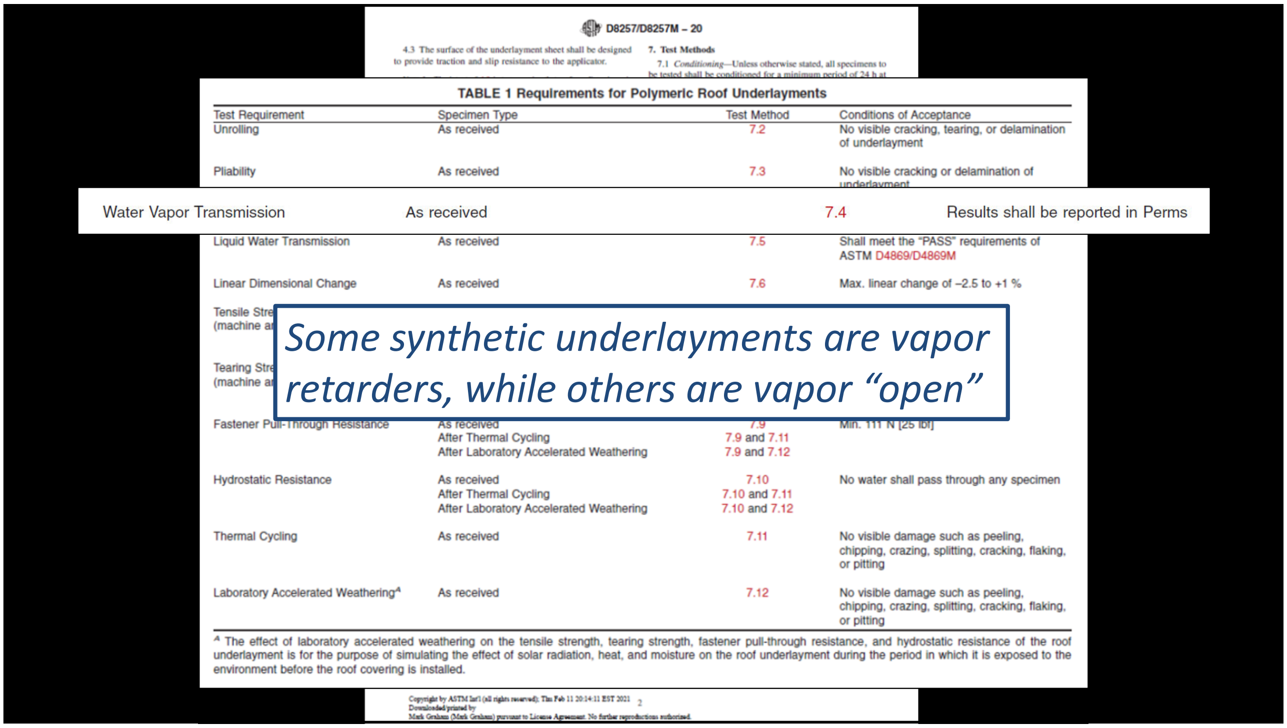

D8257/D8257M – 20

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

7. Test Methods

7.1 Conditioning—Unless otherwise stated, all specimens to be tested shall be conditioned for a minimum period of 24 h at

TABLE 1 Requirements for Polymeric Roof Underlayments

Test Requirement	Specimen Type	Test Method	Conditions of Acceptance
Unrolling	As received	7.2	No visible cracking, tearing, or delamination of underlayment
Pliability	As received	7.3	No visible cracking or delamination of underlayment
Water Vapor Transmission	As received	7.4	Results shall be reported in Perms
Liquid Water Transmission	As received	7.5	Shall meet the "PASS" requirements of ASTM D4869/D4869M
Linear Dimensional Change	As received	7.6	Max. linear change of –2.5 to +1 %
Tensile Stre (machine a			
Tearing Stre (machine a			
Fastener Pull-Through Resistance	As received After Thermal Cycling After Laboratory Accelerated Weathering	7.9 7.9 and 7.11 7.9 and 7.12	Min. 111 N [25 lbf]
Hydrostatic Resistance	As received After Thermal Cycling After Laboratory Accelerated Weathering	7.10 7.10 and 7.11 7.10 and 7.12	No water shall pass through any specimen
Thermal Cycling	As received	7.11	No visible damage such as peeling, chipping, crazing, splitting, cracking, flaking, or pitting
Laboratory Accelerated Weathering[A]	As received	7.12	No visible damage such as peeling, chipping, crazing, splitting, cracking, flaking, or pitting

[A] The effect of laboratory accelerated weathering on the tensile strength, tearing strength, fastener pull-through resistance, and hydrostatic resistance of the roof underlayment is for the purpose of simulating the effect of solar radiation, heat, and moisture on the roof underlayment during the period in which it is exposed to the environment before the roof covering is installed.

Some synthetic underlayments are vapor retarders, while others are vapor "open"

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Measurement of a vapor retarder's effectiveness

Classification	Permeance[1]
Class I vapor retarder	0.1 perm or less
Class II vapor retarder	1.0 perm or less and greater than 0.1 perm
Class III vapor retarder	10 perm or less and greater than 1.0 perm

[1] Permeance determined according to ASTM E-96 Test Method A (the desiccant method or dry cup method)

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VAPOR PERMEABILITY PROVIDES

TEST MATERIAL	PERMEANCE RATING
Asphalt shingles – individual	0.9
#15 felt	7.0
Breathable synthetic	9.5
Nonbreathable synthetic	0.1
7/16-in. OSB decking	1.0

TEST MATERIAL	PERMEANCE RATING
OSB, #15 felt, Classic® shingles	0.31
OSB, Fiberglas™-reinforced felt, Classic® shingles	0.32
OSB, nonbreathable, Classic® shingles	0.27

IIBEC (formerly RCI) *Interface*

December 2011

Link

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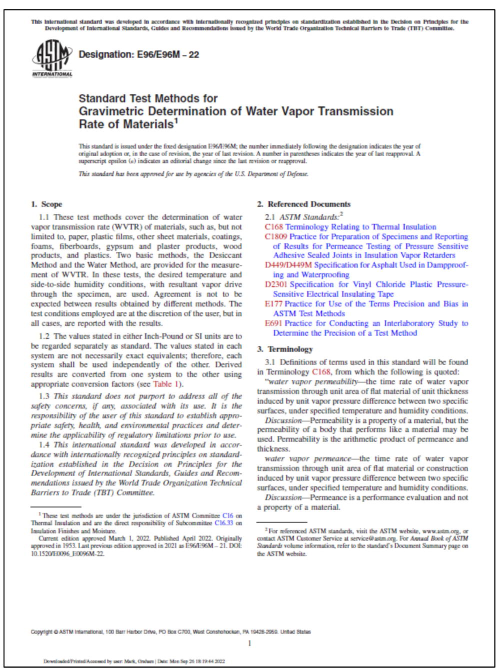


This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

ASTM INTERNATIONAL

Designation: E96/E96M – 22

Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials[1]

This standard is issued under the fixed designation E96/E96M; 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 U.S. Department of Defense.

1. Scope

1.1 These test methods cover the determination of water vapor transmission rate (WVTR) of materials, such as, but not limited to, paper, plastic films, other sheet materials, coatings, foams, fiberboards, gypsum and plaster products, wood products, and plastics. Two basic methods, the Desiccant Method and the Water Method, are provided for the measurement of WVTR. In these tests, the desired temperature and side-to-side humidity conditions, with resultant vapor drive through the specimen, are used. Agreement is not to be expected between results obtained by different methods. The test conditions employed are at the discretion of the user, but in all cases, are reported with the results.

1.2 The values stated in either Inch-Pound or SI units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, each system shall be used independently of the other. Derived results are converted from one system to the other using appropriate conversion factors (see Table 1).

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:*[2]

C168 Terminology Relating to Thermal Insulation
C1809 Practice for Preparation of Specimens and Reporting of Results for Permeance Testing of Pressure Sensitive Adhesive Sealed Joints in Insulation Vapor Retarders
D449/D449M Specification for Asphalt Used in Dampproofing and Waterproofing
D2301 Specification for Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape
E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 Definitions of terms used in this standard will be found in Terminology C168, from which the following is quoted:

"*water vapor permeability*—the time rate of water vapor transmission through unit area of flat material of unit thickness induced by unit vapor pressure difference between two specific surfaces, under specified temperature and humidity conditions.

Discussion—Permeability is a property of a material, but the permeability of a body that performs like a material may be used. Permeability is the arithmetic product of permeance and thickness.

water vapor permeance—the time rate of water vapor transmission through unit area of flat material or construction induced by unit vapor pressure difference between two specific surfaces, under specified temperature and humidity conditions.

Discussion—Permeance is a performance evaluation and not a property of a material.

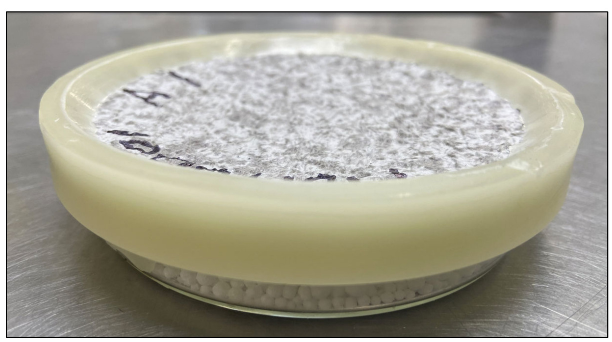
[1] These test methods are under the jurisdiction of ASTM Committee C16 on Thermal Insulation and are the direct responsibility of Subcommittee C16.33 on Insulation Finishes and Moisture.

Current edition approved March 1, 2022. Published April 2022. Originally approved in 1953. Last previous edition approved in 2021 as E96/E96M – 21. DOI: 10.1520/E0096_E0096M-22.

[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.

1

ASTM E96, "Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials"



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ASTM E96 Procedure A results

NRCA permeance testing of asphalt shingle roof assemblies

Sample	Water vapor permeance (Perms)
7/16" OSB sheathing	1.4
15/32" CDX plywood sheathing	0.9

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ASTM E96 Procedure A results -- continued

NRCA permeance testing of asphalt shingle roof assemblies

Sample	Water vapor permeance (Perms)
Non-breathable synthetic underlayment	0.02
Breathable synthetic underlayment	0.5

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ASTM E96 Procedure A results -- continued

NRCA permeance testing of asphalt shingle roof assemblies

Sample	Water vapor permeance (Perms)
Non-breathable synthetic underlayment over 7/16” OSB sheathing	0.03
Non-breathable synthetic underlayment over 15/32” CDX plywood sheathing	0.05
Breathable synthetic underlayment over 7/16” OSB sheathing	0.50
Breathable synthetic underlayment over 15/32” CDX plywood sheathing	0.22

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ASTM E96 Procedure A results -- continued

NRCA permeance testing of asphalt shingle roof assemblies

Sample	Water vapor permeance (Perms)
Laminated asphalt shingle over non-breathable synthetic underlayment over 7/16” OSB sheathing	0.05
Laminated asphalt shingle over non-breathable synthetic underlayment over 15/32” CDX plywood sheathing	0.04
Laminated asphalt shingle over breathable synthetic underlayment over 7/16” OSB sheathing	0.40
Laminated asphalt shingle over breathable synthetic underlayment over 15/32” CDX plywood sheathing	0.09

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ASTM E96 Procedure A results -- continued

NRCA permeance testing of asphalt shingle roof assemblies

Sample	Water vapor permeance (Perms)
Laminated asphalt shingle over non-breathable synthetic underlayment over 7/16" OSB sheathing	0.05 0.10 with nail
Laminated asphalt shingle over non-breathable synthetic underlayment over 15/32" CDX plywood sheathing	0.04 0.10 with nail
Laminated asphalt shingle over breathable synthetic underlayment over 7/16" OSB sheathing	0.40 0.50 with nail
Laminated asphalt shingle over breathable synthetic underlayment over 15/32" CDX plywood sheathing	0.09 0.18 with nail

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"Preliminary" conclusions

NRCA permeance testing of asphalt shingle roof assemblies

- There is a potential for condensation development at the roof deck level when using synthetic underlayment
- Functional below-deck ventilation is (even more) important for mitigating condensation development at the roof deck level when using synthetic underlayment

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MRCA/NRCA ignition temperature research

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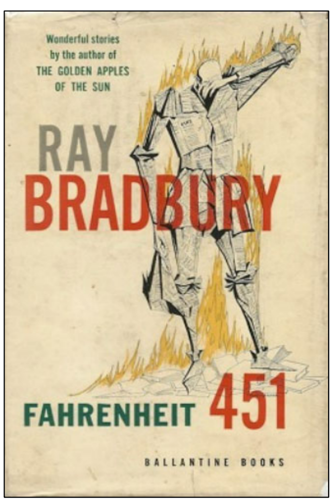

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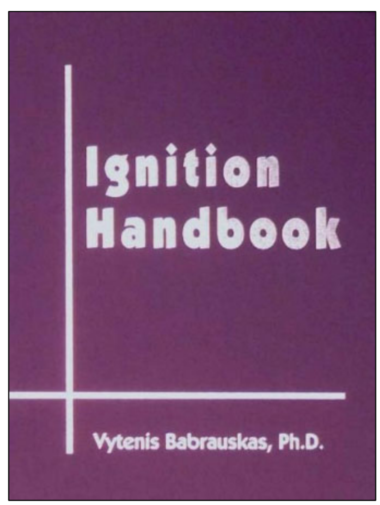

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Some known roof application temperatures

Mopping bitumen:
- EVT: 375 F to 455 F (typ.)
- Flash point: 525 F (min.)

Hot-air welding:
- Equipment settings up to 600 C (1,112 F)

Torch application:
- Blue flame: 3,596 F
- Yellow/orange flame: 1,800 F

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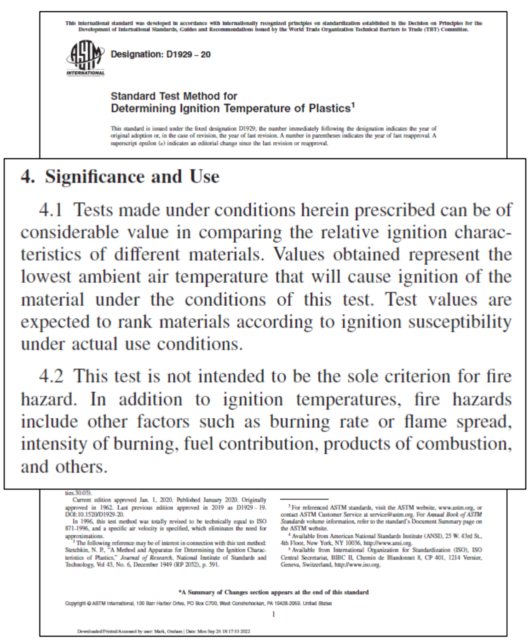

This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D1929 – 20

Standard Test Method for
Determining Ignition Temperature of Plastics[1]

This standard is issued under the fixed designation D1929; 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.

4. Significance and Use

4.1 Tests made under conditions herein prescribed can be of considerable value in comparing the relative ignition characteristics of different materials. Values obtained represent the lowest ambient air temperature that will cause ignition of the material under the conditions of this test. Test values are expected to rank materials according to ignition susceptibility under actual use conditions.

4.2 This test is not intended to be the sole criterion for fire hazard. In addition to ignition temperatures, fire hazards include other factors such as burning rate or flame spread, intensity of burning, fuel contribution, products of combustion, and others.

ties.30.03).

Current edition approved Jan. 1, 2020. Published January 2020. Originally approved in 1962. Last previous edition approved in 2019 as D1929 – 19. DOI:10.1520/D1929-20.

In 1996, this test method was totally revised to be technically equal to ISO 871-1996, and a specific air velocity is specified, which eliminates the need for approximations.

[2] The following reference may be of interest in connection with this test method: Stetchkin, N. P., "A Method and Apparatus for Determining the Ignition Characteristics of Plastics," *Journal of Research*, National Institute of Standards and Technology, Vol 43, No. 6, December 1949 (RP 2052), p. 591.

[3] 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.

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

[5] Available from International Organization for Standardization (ISO), ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, http://www.iso.org.

***A Summary of Changes section appears at the end of this standard**

1

ASTM D1929, "Standard Test Method for Determining Ignition Temperature of Plastics"

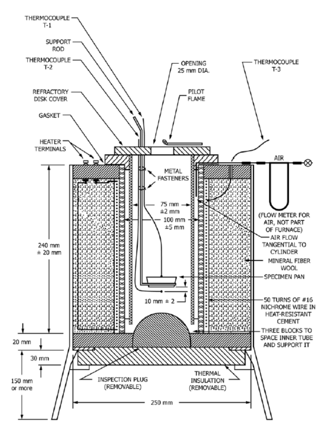

FIG. 1 Cross Section of Hot-Air Ignition Furnace

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ASTM D1929 results

Sample	Test result
Extruded polystyrene	865 F
HD polyiso with glass facer	865 F
Wood fiberboard	875 F
Polyiso with coated glass facer	895 F
Perlite board	905 F
Expanded polystyrene	910 F
Polyiso with cellulose/glass facer	920 F
Cellular glass with facer	965 F
Mineral fiber board	1,040 F
Gypsum-fiber board	Greater than 1,740 F
Gypsum board with coated fiberglass facer	Greater than 1,740 F
Cellular glass (no facer)	Greater than 1,740 F

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Recommendations

- When hot-air welding or torching roofing products, realize the relative differences in ignition temperatures of various insulation substrates
- Share this information/concept with field workers

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Field uplift testing

ASTM E907 or FM 1-52

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INDUSTRY ISSUE UPDATE

NRCA Member Benefit

Field-uplift testing

ASTM E907 and FM 1-52 tests continue to be problematic

June 2015

NRCA continues to receive a significant number of reports from roofing contractors, manufacturers and designers regarding the use of and problems associated with field-uplift tests as post-installation quality assurance measures for membrane roof systems. NRCA has addressed these testing issues a number of times during the years. Following is a summary of NRCA's previous discussions, as well as updated information and recommendations.

ASTM E907/FM 1-52

There are two recognized field test methods for determining adhered membrane roof systems' uplift resistances: ASTM E907, "Standard Test Method for Field Testing Uplift Resistance of Adhered Membrane Roofing Systems," and FM Global Loss Prevention Data Sheet 1-52 (FM 1-52), "Field Verification of Roof Wind Uplift Resistance."

An example of a test chamber used for negative-pressure uplift testing

Both test methods are similar and provide for affixing a 5- by 5-foot dome-like chamber to a roof surface's topside and applying a defined negative (uplift) pressure inside the chamber to the roof system's exterior-side surface using a vacuum pump (see photo). During the test, membrane surface deflection inside the chamber is visually monitored and measured to determine whether a roof system passes or is "suspect."

Using ASTM E907, a roof system is considered to be suspect if the deflection measured during the test is 25 mm (about 1 inch) or greater. During FM 1-52 testing, a roof system is suspect if the measured deflection is between ¼ of an inch and 15/16 of an inch depending on the maximum test pressure: 1 inch where a thin topping board (cover board) is used; or 2 inches where a thin cover board or flexible, mechanically attached insulation is used.

If an ASTM E907 or FM 1-52 test yields a suspect result, a test cut should be taken in the test area to determine whether failure has occurred and the specific failure mode.

ASTM E907 and FM 1-52 differ notably in their test cycles and maximum test pressures for determining roof system deflections and whether a roof system passes or is suspect. ASTM E907 testing is conducted in 15-pounds per square foot (psf) pressure intervals up to the calculated design wind (uplift) pressure for the specific roof system being evaluated. FM 1-52 testing is conducted using an initial 15-pounds psf pressure followed by 7.5-pound psf increments up to a maximum test pressure of 1.25 times the design uplift pressure for the specific roof system being evaluated.

Considering maximum test loading and allowable test deflections in combination, FM 1-52 requires 25 percent higher test loads, yet only allows as little as ¼ the test deflection of ASTM E907. That said, FM 1-52 is a significantly more stringent test than ASTM E907.

ASTM E907 originally was published as a recognized consensus standard in 1983, and it was revised in 1996. In 2013, ASTM withdrew ASTM E907 because a consensus could not be reached regarding necessary revisions—most significantly, defining the test method's precision and bias (accuracy). ASTM E907-96 still is available for use and can be obtained directly from ASTM's website, www.astm.org.

FM 1-52 is an FM Global-promulgated evaluation method and not a recognized industry-consensus test standard. FM 1-52's scope indicates it only is intended to confirm acceptable wind-uplift resistance on completed roof systems in hurricane-prone regions, where a partial blow-off has occurred or where inferior roof system construction is suspected or known to be present.

FM 1-52 originally was published by FM Global in October 1970. The negative-pressure uplift test was added in August 1980 and has been revised several times. The current edition is dated July 2012 and includes an option for "visual construction observation (VCO)" as an alternative to negative-pressure uplift testing. VCO provides for full-time, third-party monitoring of a roof system application to verify roof system installation in accordance with contract documents.

NRCA Industry Issue Update

June 2015

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RESEARCH+TECH

Revisiting field uplift testing

NRCA's long-standing concerns continue with this issue

by Mark S. Graham

It has been a while since I have written about NRCA's concerns with field uplift testing, which sometimes is inappropriately used as a way to assess the quality of an adhered membrane roof system installation. Despite the time that has passed, NRCA continues to have reservations about field uplift testing, and the test procedure has not yet been revised to address NRCA's concerns.

ASTM E907

In 2013, ASTM International withdrew its consensus-based test method for field uplift testing, ASTM E907, "Standard Test Method for Field Testing Uplift Resistance of Adhered Membrane Roofing Systems."

ASTM International requires its test method standards to include a precision statement addressing two things:

"…NRCA is participating in this interlaboratory study program…"

Professional Roofing

December/January 2022-23

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In the ASTM ILS, two-thirds of the FM 1-90 specimens tested "failed" the field uplift test below the 90 psf test level.

Field uplift test results did not correlate with FM Approvals' classification; field uplift testing showed lower results.

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Watch for more information on this after the June ASTM Committee D08 meeting…

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Revisions to PIMA's QualityMark^{CM} program

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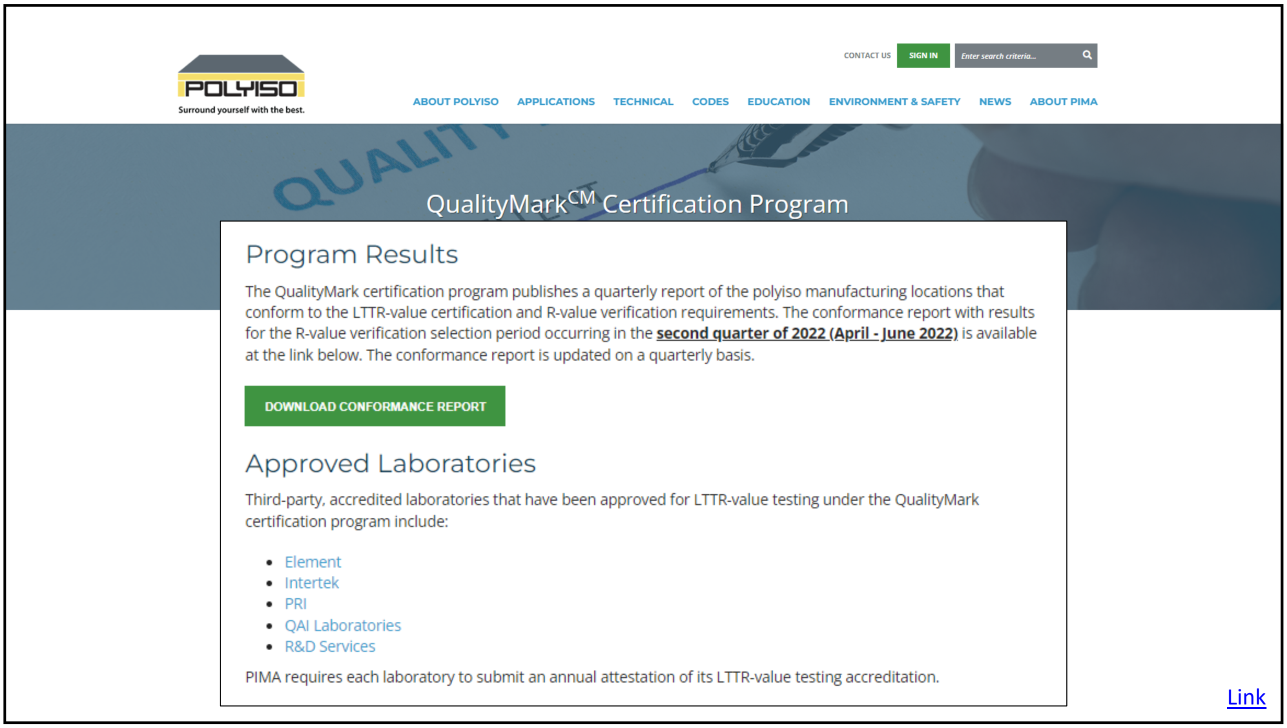

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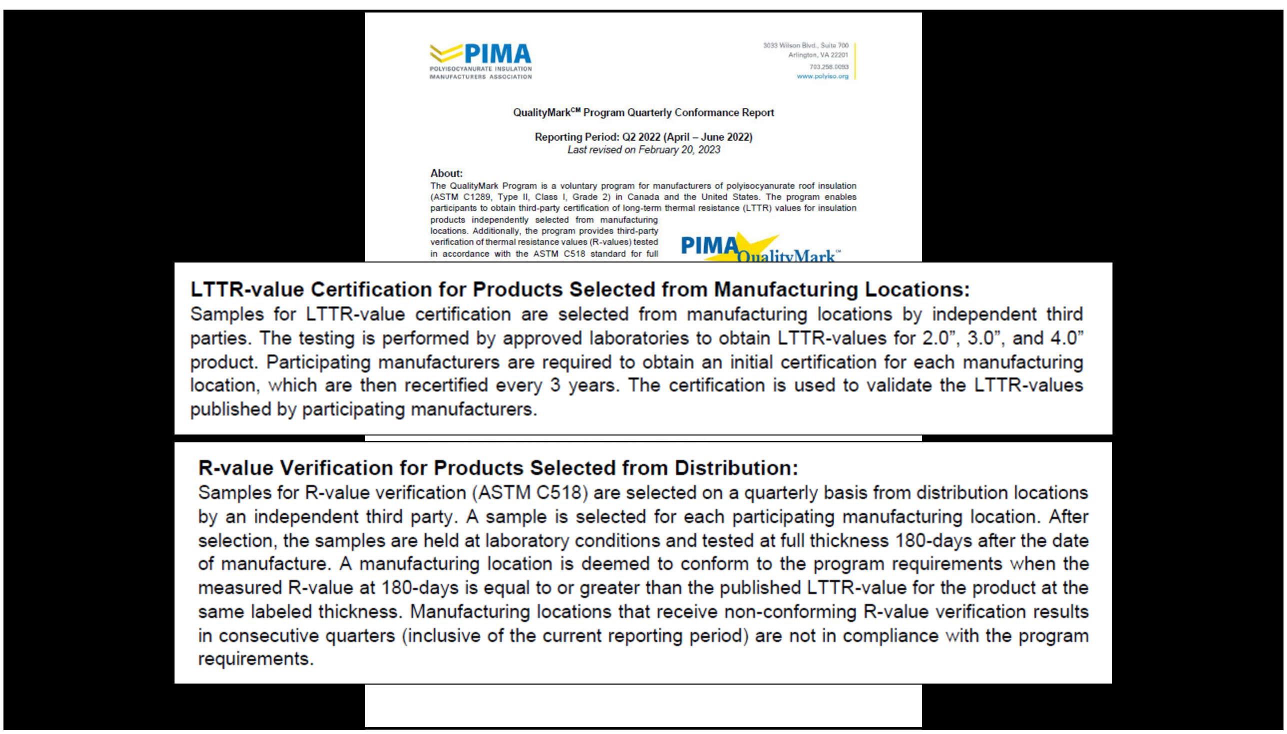

PIMA
POLYISOCYANURATE INSULATION MANUFACTURERS ASSOCIATION

3033 Wilson Blvd., Suite 700
Arlington, VA 22201
703.258.0093
www.polyiso.org

QualityMark^{CM} Program Quarterly Conformance Report

Reporting Period: Q2 2022 (April – June 2022)
Last revised on February 20, 2023

About:
The QualityMark Program is a voluntary program for manufacturers of polyisocyanurate roof insulation (ASTM C1289, Type II, Class I, Grade 2) in Canada and the United States. The program enables participants to obtain third-party certification of long-term thermal resistance (LTTR) values for insulation products independently selected from manufacturing locations. Additionally, the program provides third-party verification of thermal resistance values (R-values) tested in accordance with the ASTM C518 standard for full

PIMA QualityMark™

LTTR-value Certification for Products Selected from Manufacturing Locations:
Samples for LTTR-value certification are selected from manufacturing locations by independent third parties. The testing is performed by approved laboratories to obtain LTTR-values for 2.0", 3.0", and 4.0" product. Participating manufacturers are required to obtain an initial certification for each manufacturing location, which are then recertified every 3 years. The certification is used to validate the LTTR-values published by participating manufacturers.

R-value Verification for Products Selected from Distribution:
Samples for R-value verification (ASTM C518) are selected on a quarterly basis from distribution locations by an independent third party. A sample is selected for each participating manufacturing location. After selection, the samples are held at laboratory conditions and tested at full thickness 180-days after the date of manufacture. A manufacturing location is deemed to conform to the program requirements when the measured R-value at 180-days is equal to or greater than the published LTTR-value for the product at the same labeled thickness. Manufacturing locations that receive non-conforming R-value verification results in consecutive quarters (inclusive of the current reporting period) are not in compliance with the program requirements.

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QualityMark Program Quarterly Conformance Report[1] Reporting Period: Q2 2022 (April – June 2022)		
Manufacturing Location		Manufacturer
City	State/Province	
High River*	Alberta	IKO Industries Ltd.
Phoenix	Arizona	Atlas Roofing Corporation
Vancouver	British Columbia	Atlas Roofing Corporation
Northglenn	Colorado	Atlas Roofing Corporation
Bristol	Connecticut	Holcim Building Envelope
Jacksonville	Florida	Holcim Building Envelope
Jacksonville*	Florida	Johns Manville
Lake City	Florida	Carlisle Construction Materials
LaGrange	Georgia	Atlas Roofing Corporation
Statesboro	Georgia	GAF
Florence	Kentucky	Holcim Building Envelope
East Moline	Illinois	Atlas Roofing Corporation
Franklin Park	Illinois	Carlisle Construction Materials
Bremen*	Indiana	Johns Manville
Fernley*	Nevada	Johns Manville
Montgomery	New York	Carlisle Construction Materials
Cornwall*	Ontario	Johns Manville
Toronto	Ontario	Atlas Roofing Corporation
Camp Hill	Pennsylvania	Atlas Roofing Corporation
Hazleton*	Pennsylvania	Johns Manville
Smithfield	Pennsylvania	Carlisle Construction Materials
Youngwood	Pennsylvania	Holcim Building Envelope
Drummondville	Quebec	SOPREMA
Corsicana	Texas	Holcim Building Envelope
Diboll	Texas	Atlas Roofing Corporation
Gainesville	Texas	GAF
Terrell	Texas	Carlisle Construction Materials
Cedar City	Utah	GAF
Tooele	Utah	Carlisle Construction Materials
Puyallup	Washington	Carlisle Construction Materials
Last revised on February 20, 2023. Current report available at www.polyiso.org/QUALITYMARK.		

*This manufacturing location has a pending result for its LTTR-value certification. The table above will be periodically updated as LTTR-value certifications are completed.

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Table Note 1:
The manufacturing locations listed below have recently been brought on-line. The time represented by the current reporting period was prior to the date the location either started commercial production or completed its initial LTTR-value certification. Results for these plants will be included in future reporting periods.

- Hagerstown, Maryland – IKO Industries Ltd.
- New Columbia, Pennsylvania – GAF
- Hillsboro, Texas – Johns Manville

Questions:
For questions regarding the QualityMark Program, please contact PIMA using the "Contact Us" form on the website here.

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Recommendations

- Watch for updates to PIMA's Quarterly Conformance Report
- Consider asking polyiso. manufacturers to certify their current compliance

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New gutter testing requirements

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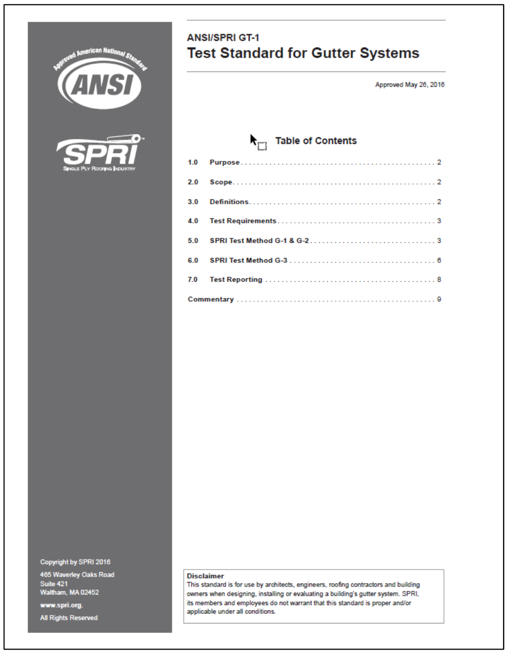

ANSI/SPRI GT-1
Test Standard for Gutter Systems

Approved May 26, 2016

Table of Contents

Disclaimer
This standard is for use by architects, engineers, roofing contractors and building owners when designing, installing or evaluating a building's gutter system. SPRI, its members and employees do not warrant that this standard is proper and/or applicable under all conditions.

ANSI/SPRI GT-1, "Test Standard for Gutter Systems"

Link

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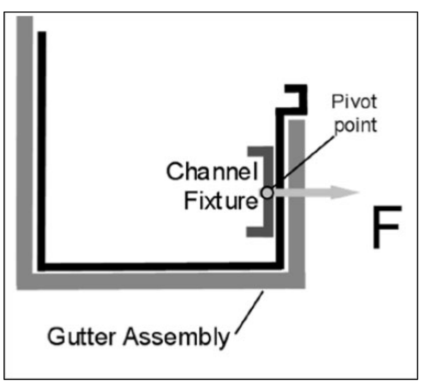
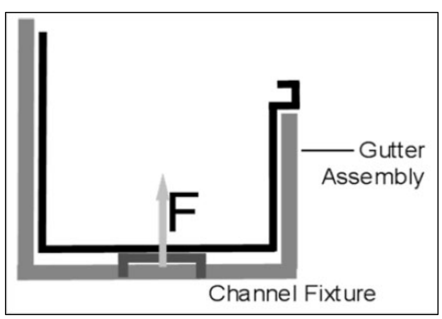
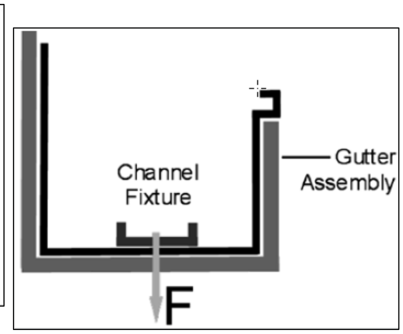


SPRI Test G-1 (Outward load)



SPRI Test G-1 (Upward load)



SPRI Test G-3 (Downward load)

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International Building Code, 2021 Edition

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ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

1504.5 Ballasted low-slope single-ply roof systems. Ballasted low-slope (roof slope < 2:12) single-ply roof system coverings installed in accordance with Section 1507.12 shall be designed in accordance with ANSI/SPRI RP-4.

coverings that are subject to cyclical flexural response due to wind *loads* shall not demonstrate any significant loss of tensile strength for unreinforced membranes or breaking strength for reinforced membranes when tested as herein required.

1504.6 Edge systems for low-slope roofs. Metal edge systems, except gutters and counterflashing, installed on built-up, modified bitumen and single-ply roof systems having a slope less than 2 units vertical in 12 units horizontal (2:12) shall be designed and installed for wind *loads* in accordance with Chapter 16 and tested for resistance in accordance with Test Methods RE-1, RE-2 and RE-3 of ANSI/SPRI ES-1, except basic design *wind speed*, V, shall be determined from Figures 1609.3(1) through 1609.3(12) as applicable.

1504.6.1 Gutter securement for low-slope roofs. Gutters that are used to secure the perimeter edge of the roof membrane on low-slope (less than 2:12 slope) built-up, modified bitumen, and single-ply roofs, shall be designed, constructed and installed to resist wind loads in accordance with Section 1609 and shall be tested in accordance with Test Methods G-1 and G-2 of SPRI GT-1.

2021 INTERNATIONAL BUILDING CODE® 15-3

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NRCA has completed GT-1 testing of gutters and just launched GT-1 certification programs as companions to our UL Solutions and Intertek certification programs for shop-fabricated edge metal

Contact Andrea Khalil at NRCA for more information
akhalil@nrca.net

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Contractor-reported problems…

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Questions… and other topics

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Mark S. Graham
Vice President, Technical Services
National Roofing Contractors Association
10255 West Higgins Road, 600
Rosemont, Illinois 60018-5607

(847) 299-9070
mgraham@nrca.net
www.nrca.net

Personal website:
www.MarkGrahamNRCA.com
LinkedIn: linkedin.com/in/MarkGrahamNRCA

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