



CONSTRUCTION MATERIALS

TECHNOLOGIES

LABORATORY TEST RESULTS

Report for: Gardner Gibson
4146 E. 7th Avenue
Tampa, FL 33605

Attention: Don Portfolio

Product Name(s): FT ³ Tile Underlayment	Manufacturer: Gardner Gibson
PRI-CMT Project No.: GGI-195-02-01	Source: See Sampling Section
Date Received: See Sampling Section	Dates Tested: April 13, 2017 – July 12, 2017

Purpose: Determine specification properties for *Gardner Gibson's FT³ Tile Underlayment* for compliance with **ASTM D 1970: Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.**

Testing for Extended Exposure for 180d was conducted in accordance with ASTM D 1970: *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection* for properties prescribed in Testing Application Standard 110 – 2000: Testing Requirements for Physical Properties of Roof Membranes, Insulation, Coatings, and other Roofing Components.

Test Methods: Testing was completed as described in ASTM D 1970/D 1970M-09 and -13: *Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection*. Test methods assigned or referenced include ASTM D 903: *Standard Test Method for Peel or Stripping Strength of Adhesive Bonds*, ASTM D 1204: *Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplastic Sheeting or Film at Elevated Temperature*, ASTM D 2523: *Standard Practice for Testing Load-Strain Properties of Roofing Membranes*, ASTM D 4073: *Standard Test Method for Tensile-Tear Strength of Bituminous Roofing Membranes*, ASTM D 5147: *Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material*, and ASTM E 96: *Standard Test Methods for Water Vapor Transmission of Materials*.

Sampling: The following materials were received by PRI.

<u>Product</u>	<u>Source</u>	<u>Date</u>
FT ³ Tile Underlayment	Tampa, FL	April 13, 2017

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Results of Testing:
ASTM D 1970

Property	Test Method	Results	Requirement
Physical Requirements			
Thickness; min; (mils) 1 specimen; 27-1/2" x manufacture width; 5 measurement points	ASTM D 5147	50	≥ 40
Maximum Load (lbf/in-width) 5 specimens; 1" x 6"; Cond. 2h @ 73.4±3.6°F; Test @ 73.4±3.6°F; Rate = 2in/min ±3%	ASTM D 2523 / ASTM D 1970		
MD		76	≥ 25
CMD		49	≥ 25
Elongation at Break (modified bitumen portion) (%) 5 specimens; 1" x 6"; Cond. 2h @ 73.4±3.6°F; Test @ 73.4±3.6°F; Rate = 2in/min ±3%	ASTM D 2523 / ASTM D 1970		
MD		53	≥ 10
CMD		62	≥ 10
Adhesion to plywood (lbf/ft-width) 5 specimens; 3" x 8" (bonded 3" x 5" to plywood) Cond. 1h @ 40±2°F; Test @ 39.2±3.6°F; Rate = 2in/min ±3%	ASTM D 903 / ASTM D 1970	27	≥ 2.0
Adhesion to plywood (lbf/ft-width) 5 specimens; 3" x 8" (bonded 3" x 5" to plywood) Cond. 1h @ 75±2°F; Test @ 73.4±3.6°F; Rate = 2in/min ±3%	ASTM D 903 / ASTM D 1970	76	≥ 12
Thermal Stability (in) 5 specimens; 4" x 4" (bonded to plywood); Test 14d @ 158±4°F; Equilibrate to 75±2°F & 50±5%RH for 4h;	ASTM D 1204 / ASTM D 1970	~0	≤ 0.1
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Property	Test Method	Results	Requirement
Low Temperature Flexibility [Pass/Fail] 5 specimens; 1" x 6" Cond. 2h @ -20°F; Test 180±5° over 1"±5% Ø in 2±1s @ -20°F; Visual Inspection in "flexed" position; Self Sealability (head of water test) on "flexed" specimen	ASTM D 1970		
MD		Pass	No visible signs of cracking in the sheet -or- minor surface cracking and "pass" head of water test
CMD		Pass	No visible signs of cracking in the sheet -or- minor surface cracking and "pass" head of water test
Tear Resistance; min; (lbf) 5 specimens; 3" x 8" with assigned notch; Cond. 4h @ 74±4°F & 50±5%RH; Test @ 74±4°F; Rate = 2.0in/min ±3%	ASTM D 4073 / ASTM D 1970		
MD		78	≥ 20
CMD		113	≥ 20
Moisture Vapor Permeance (U.S. Perms) 3 specimens; 3.5" Ø; Weathering side to higher vapor pressure; Test @ 73.4±3.6°F & 50±5%RH	ASTM E 96 Procedure BW	0.05	≤ 0.1
Self-Sealability [Pass/Fail] 2 specimens; 12" x 12" (bonded to plywood); Two 1-1/4" roofing nails placed near center of specimen; Cond. 24h @ ambient; Test 5in _{w.c.} @ 40±5°F for 3d; Visual Inspection for water infiltration	ASTM D 1970- 09	Pass	Pass
Bottom Can; [Water/No Water]		No Water	No Water
Nail Shank; [Water/No Water]		No Water	No Water
Underside of Plywood; [Water/No Water]		No Water	No Water
Between Plywood & Underlayment; [Water/No Water]		No Water	No Water

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Property	Test Method	Results	Requirement
Self-Sealability; After Low Temp Flexibility [Pass/Fail] 2 specimens; Low Temperature Flexibility specimen; Cond. 24h @ ambient; Test 5inw.c. @ 40±5°F for 3d; Visual Inspection for water infiltration	ASTM D 1970	Pass	Pass
Bottom Can; [Water/No Water]		No Water	No Water
Nail Shank; [Water/No Water]		No Water	No Water
Underside of Plywood; [Water/No Water]		No Water	No Water
Between Plywood & Underlayment; [Water/No Water]		No Water	No Water
Self-Sealability; Lap Seam [Pass/Fail] 2 specimens; 12" x 12" (bonded to plywood); Lap Seam placed near center of specimen; Cond. 24h @ ambient; Test 5inw.c. @ 40±5°F for 3d; Visual Inspection for water infiltration	ASTM D 1970	Pass	Pass
Bottom Can; [Water/No Water]		No Water	No Water
Underside of Plywood; [Water/No Water]		No Water	No Water
In the Lap Seam; [Water/No Water]		No Water	No Water
Between Plywood & Underlayment; [Water/No Water]		No Water	No Water
Slip Resistance	None	Pass	"greater than asphalt saturated felt when tested under the same conditions of temp and wetness"
Physical Requirements – Other			
Unrolling [Pass/Fail] 4 specimens; 10±1/8" x 18±1/8" Cond. 24h @ 73.4±3.6°F & 50±5%RH; Test Cond. 2h @ Temp±1°F; Test unroll in 4-6s; Visual Inspection in "unrolled" position	ASTM D 5636 / ASTM D 5147 / ASTM D 1970	Pass	Pass = "shall not crack nor be so sticky as to cause tearing or other damage upon being unrolled at temps between 40 and 140°F"

Notes: NT = Not Tested

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Extended Exposure Limitation – 180d (1,000h) TAS 110 / ASTM D 4798 / ASTM D 5147

Property	Test Method	Results	Requirement
Physical Requirements			
Maximum Load (lbf/in-width) 5 specimens; 1" x 6"; Cond. 2h @ 73.4±3.6°F; Test @ 73.4±3.6°F; Rate = 2in/min ±3%	ASTM D 2523 / ASTM D 1970		
MD		33	≥ 25
CMD		25	≥ 25
Elongation at Break (modified bitumen portion) (%) 5 specimens; 1" x 6"; Cond. 2h @ 73.4±3.6°F; Test @ 73.4±3.6°F; Rate = 2in/min ±3%	ASTM D 2523 / ASTM D 1970		
MD		46	≥ 10
CMD		46	≥ 10
Adhesion to plywood (lbf/ft-width) 5 specimens; 3" x 8" (bonded 3" x 5" to plywood) Cond. 1h @ 40±2°F; Test @ 40±2°F; Rate = 2in/min ±3%	ASTM D 903 / ASTM D 1970	85	≥ 2.0
Adhesion to plywood (lbf/ft-width) 5 specimens; 3" x 8" (bonded 3" x 5" to plywood) Cond. 1h @ 75±2°F; Test @ 75±2°F; Rate = 2in/min ±3%	ASTM D 903 / ASTM D 1970	87	≥ 12
Low Temperature Flexibility [Pass/Fail] 5 specimens; 1" x 6" Cond. 2h @ -20°F; Test 180±5° over 1"±5% Ø in 2±1s @ -20°F; Visual Inspection in "flexed" position; Self Sealability (head of water test) on "flexed" specimen	ASTM D 1970		
MD		Pass	No visible signs of cracking in the sheet -or- minor surface cracking and "pass" head of water test
CMD		Pass	
Tear Resistance; min; (lbf) 5 specimens; 3" x 8" with assigned notch; Cond. 4h @ 74±4°F & 50±5%RH; Test @ 74±4°F; Rate = 2.0in/min ±3%	ASTM D 4073 / ASTM D 1970		
MD		29	≥ 20
CMD		43	≥ 20

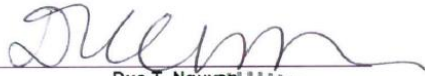
Note(s): None

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Statement of Compliance: The product tested complies with **ASTM D 1970/D 1970M-09 and -13: Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection**. The laboratory test results presented in this report are representative of the material supplied.

Signed: 
Jason Simmons
Director
Date: 7/17/2017

Signed: 
Duc T. Nguyen
Florida Registered Professional Engineer
P.E. Number: 65034
Date: 7/17/2017

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	07/17/2017	7	NA

END OF REPORT

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