



PRI Construction Materials Technologies LLC

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Laboratory Test Report

Report for: Steven Crew
Warrior Roofing Manufacturing
3050 Warrior Rd.
Tuscaloosa, AL

Product Name(s): 15W

Project No.: 976T0004

Date(s) Tested: October 20, 2023 – November 7, 2023

Test Methods: ASTM D 4869 / D 4869M-16 & -16a

Results Summary: Meets Type I requirements

Purpose: Evaluate the identified product for compliance to the requirements of **ASTM D 4869 / D 4869M: Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing, Type I.**

Test Methods: Testing was completed as described in ASTM D 4869 / D 4869M-16 & -16a: *Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing*. Test methods assigned or referenced include ASTM D 70: *Standard Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)*; ASTM D 95: *Standard Test Method for Water in Petroleum Products and Bituminous Materials by Distillation*; ASTM D 146 / D 146M: *Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing*; ASTM D 1922: *Standard Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Tear*; ASTM D 5636: *Standard Test Method for Low Temperature Unrolling of Felt or Sheet Roofing and Waterproofing Materials*; and ASTM D 6136 / D6136M: *Standard Test Method for Kerosine Number of Unsaturated (Dry) Felt by Vacuum Method*.

Sampling: The following materials were received by PRI.

<u>Product</u>	<u>Source</u>	<u>Date</u>	<u>Sampling</u>
15W	Tuscaloosa, AL	October 12, 2023	Warrior Roofing

The location of manufacture for the sample tested has been verified as Tuscaloosa, AL.

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Results:

Property	Test Method	Result	Requirement			
			Type I	Type II	Type III	Type IV
Physical Requirements – As Received						
Tear Strength, lbf Elmendorf-type tear tester; 5 specimens; Cond. 40h @ 73±4°F & 50±10%RH; Test @ 73±4°F & 50±10%RH;	ASTM D 1922					
	MD	1.1	≥ 0.45	≥ 0.45	≥ 0.90	≥ 0.90
	CMD	1.2	≥ 0.45	≥ 0.45	✱ ≥ 0.90	≥ 0.90
Pliability, (Pass/Fail) 10 specimens; 1" x 8"; Immerse in H ₂ O for 10-15min @ 77±2°F; Bend 90° in 2s over specified R @ 73±4°F	ASTM D 146		Pass = "No surface rupture > 1/8" in length"			
	MD	Pass	0.50 in radius	0.50 in radius	0.75 in radius	0.75 in radius
	CMD	Pass	0.50 in radius	0.50 in radius	0.75 in radius	0.75 in radius
Loss on heating, % 2 specimens; 12" x 6"; Suspend in oven for 5h±3min @ 221±5°F;	ASTM D 146	1.2	≤ 6			
Liquid Water Transmission, (Pass/Fail) 2 specimens; 14° slope; Cond. 24h @ 70-80°F & 30-55%RH; 40-42 gal/h shower exposure for 4h;	ASTM D 4869	Pass	Pass = "No sign of any liquid water wetness on either specimen underside or top of plywood support or visible deterioration of the specimen"			
Breaking Strength, lbf/in. 10 specimens; 1"x 6"; Cond. 2h @ 73±4°F & 50±10%RH; Test @ 73±4°F & 50±10%RH; Rate = 2 in./min;	ASTM D 146					
	MD	51	≥ 30	≥ 30	≥ 40	≥ 40
	CMD	20	≥ 15	≥ 15	≥ 20	≥ 20
Dimensional Stability, % 3 specimens; 1"x 8-12"; Cond. 20h @ 70-85°F & 50-55%RH; Expose 212±4°F for 5h; Cool in desiccator; Immerse 22h in DI water;	ASTM F 1087					
	MD	0.4	≤ 2.00	≤ 2.00	≤ 1.75	≤ 1.75
	CMD	1.9	≤ 2.00	≤ 2.00	≤ 1.75	≤ 1.75
Unrolling [Pass/Fail] 4 specimens; 10" x 18"; Cond. 24h @ 70±4°F & 50±5%RH; Expose 2h at temp; Unroll in 4-6s;	ASTM D 5636/ ASTM D 4869					
	Temp = 32°F	Pass	The product shall not crack nor be sticky as to cause tearing or other damage			
	Temp = 140°F	Pass				
Dimensions and Masses – As Received						
Width of the roll, in.	ASTM D 146	36.25	36±0.7% or As Agreed			
Area of the roll, ft ²	ASTM D 146	435	≥ 432 or As Agreed		≥ 216 or As Agreed	
Net mass of saturated felt, lb/100ft ²	ASTM D 146	10.9	≥ 8.0	≥ 13.0	≥ 20	≥ 26
Net mass of saturant, lb/100ft ²	ASTM D 146	6.5	≥ 4.0	≥ 6.0	≥ 12.6	≥ 15.0
Net mass of desaturated felt, lb/100ft ²	ASTM D 146	4.4	≥ 4.0	≥ 5.0	≥ 9.0	≥ 10.0
Saturation, % by wt.	ASTM D 146	149	≥ 100	≥ 120	≥ 140	≥ 150
Moisture, % by wt.	ASTM D 146/ D 95	3.2	≥ 2.0			
Saturation efficiency, % by wt.	ASTM D 4869	97	≥ 75.0	≥ 70.0	≥ 70.0	≥ 70.0

Note(s): 1- Moisture "as received" was utilized in lieu of "at the point of manufacture"

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Statement of Compliance:

The product was tested has demonstrated compliance to the requirements of Type II prescribed in ASTM D 4869 / D 4869M-16 & -16a: *Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing.*

Signed:



Jason Simmons
Director

Signed:



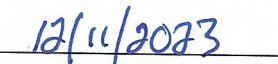
Zachary R. Priest, P.E.
Florida Registered Professional Engineer
PE No. 74021

Date:



12/8/2023

Date:



12/11/2023

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	11/17/2023	3	NA
Revision	12/8/2023	3	Added seal of FL Registered PE

END OF REPORT

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