PRI Construction Materials Technologies LLC

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Laboratory Test Report

Report for:	Rufus Aylwin SafeGuard CO 3144 SE Tualatin Valley Hwy Hillsboro, OR 97123
Product Name:	SafeGuard Eco
Project No.:	21618T0001
Date(s) Tested:	Sep. 11, 2023 – Sep. 12, 2023
Test Method(s):	ASTM D4869 (Physical Requirements) and custom analysis
Results Summary:	Results for ASTM D4869 (Physical Requirements) presented.

Purpose:

The purpose of this project was to evaluate SafeGuard Eco sample in accordance with the Physical Requirements of ASTM D4869: *Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing*. Product is identified as a hybrid asphalt synthetic underlayment. Product is not an asphalt-saturated organic felt.

Additionally, product was evaluated with respect to product composition.

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Test Methods:

For ASTM D4869 (Physical Requirements), testing was conducted as described in ASTM D4869-16a(2021): *Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing*. Test methods assigned or referenced include ASTM D146: *Standard Test Methods for Sampling and Testing Bituminous-Saturated Felts and Woven Fabrics for Roofing and Waterproofing*; ASTM D1922: *Standard Test Method for Propagation Tear Resistance of Plastic Film and Thin Sheeting by Pendulum Method*; and ASTM F1087: *Standard Test Method for Linear Dimensional Stability of a Gasket Material to Moisture*.

Additionally to evaluate product composition, the solvent extraction procedure outlined in Examination of Desaturated Felt or Fabric from ASTM D146-04(2012)e1: Standard Test Methods for Sampling and Testing Bitumen-Saturated Felts and Woven Fabrics for Roofing and Waterproofing was utilized. Briefly, specimen test strips were extracted with 1,1,1-trichloroethane in a reflux extractor. Extracted specimen was evaluated for composition per provided language and/or diagramed interpretation.

Sampling:

The following materials were received by PRI.

Product	Source	Date	Sampling
SafeGuard Eco	Hillsboro, OR	Aug. 08, 2023	SafeGuard CO

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Results: ASTM D4869 (Physical Requirements)

Physical Properties	Test Method	Results							Requirement			
									I	II	III	IV
Physical Requirements												
Tear Strength, (lb_f) single-layer specimens 10 specimens; 3in x 2.5in Cond. 2h at 73±4°F Test Temp = 73±4°F	ASTM D1922 / ASTM D4869	1	2	3	4	5	**Avg.**	St.Dev.				
	MD	>14.1	>14.1	>14.1	>14.1	>14.1						
		6	7	8	9	10						
		>14.1	>14.1	>14.1	>14.1	>14.1	**>14.1**	0	≥0.45		≥0.90	
		1	2	3	4	5	**Avg.**	St.Dev.				
	CMD	>14.1	>14.1	>14.1	>14.1	>14.1						
		6	7	8	9	10						
		>14.1	>14.1	>14.1	>14.1	>14.1	**>14.1**	0	≥0.45		≥0.90	
Pliability, *[Pass/Fail]* 5 specimens; 1in x 8in; Cond. 10-15min @ 77.0±1.8°F in water; Test 90° around 1/2in radius in 2s; Visual Inspection in "flexed" position	ASTM D146	1	2	3	4	5	**Avg.**	St.Dev.	1/2in radius		3/4in radius	
	MD	Pass	Pass	Pass	Pass	Pass	**Pass**	-	Pass			
	CMD	Pass	Pass	Pass	Pass	Pass	**Pass**	-	Pass			
Loss on Heating, (mass%) 2 specimens; 12in x 6in; Test Cond. 5h±3min @ 221±5°F	ASTM D146	1	2	3	4	5	**Avg.**	St.Dev.				
		0.8	0.9	---	---	---	**0.9**	0.1	≤ 6			
Liquid Water Transmission *[Pass/Fail]* 2 specimens; 15in x 30in; Cond. 24h @ 70-80°F & 30-55%RH; Test 4h water impingement @ 40-42gal/h	ASTM D 4869	1	2	3	4	5	**Avg.**	St.Dev.				
	Visual	Pass	Pass	---	---	---	**Pass**	---	Pass			
Breaking Strength, (lbf/in-width) 10 specimens; 1in x 6in; Cond. 2h @ 73.4±3.6°F & 50±5%RH; Test @ 73.4±3.6°F; Rate = 2in/min	ASTM D146	1	2	3	4	5	**Avg.**	St.Dev.				
	MD	64	65	82	76	79						
		6	7	8	9	10						
		76	64	76	55	53	**69**	10	≥ 30		≥ 40	
		1	2	3	4	5	**Avg.**	St.Dev.				
	CMD	231	217	205	196	220						
		6	7	8	9	10						
		208	185	188	224	200	**207**	16	≥ 15		≥ 20	

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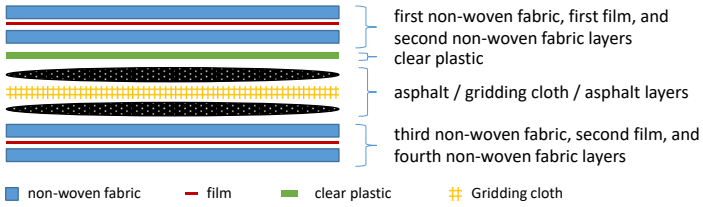
Physical Properties	Test Method	Results							Requirement			
									I	II	III	IV
Dimensional Stability, % 1"x 8-12" specimens; Cond. 20h @ 70-85°F & 50-55%RH; Expose 212±4°F for 5h; Cool in desiccator; Immerse 22h in DI water;	ASTM F 1087	1	2	3	4	5	**Avg.**	St.Dev.				
	MD	-0.05	-0.10	-0.08	---	---	**-0.08**	0.02	≤ 2.00		≤ 1.75	
	CMD	-0.24	-0.08	0.07	---	---	**-0.13**	0.08				
Physical Requirement - Other												
Unrolling, *[Pass/Fail]* 4 specimens; 10±1/8in x 18±1/8in; 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 D226	1	2	3	4	5	**Avg.**	St.Dev.				
	32°F	Pass	Pass	Pass	Pass	---	**Pass**	-	No Damage			
	140°F	Pass	Pass	Pass	Pass	---	**Pass**	-				

Note(s): None.
Note(s): 1- indicates that Tensile Strength exceeded capacity of 6400g pendulum used in testing.

Product Composition: The following product composition was observed.



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Discussion: ASTM D226 (Physical Requirements) results are presented.

This analysis did not include material identification (e.g. polyester non-woven fabric, oxidized asphalt, rubber cement-based film) or material specifications (e.g. amount of asphalt, density of fabric, breaking strength of reinforcement).

The laboratory test results presented in this report are representative of the materials supplied and installation detailed.

Signed: _____ **Signed:** _____

Anthony Catlett
Laboratory Manager

Bill Hinkle
Manager, Client Services

Date: 10/10/2023 **Date:** 10/10/2023

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	10/10/2023	5	NA

END OF REPORT