

CLIENT: TUFF INDUSTRIES INCORPORATED
9570 Bottom Wood Lake Road
Lake Country, British Columbia
Canada V4V 1S7

Test Report No: TJ8150-1A-SUMMARY	Issue Date: March 8, 2024
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SAMPLE ID: Tufdek Type 3A woven internally reinforced, vinyl-backed Polyvinyl Chloride (PVC) sheet-applied decking membranes of 60 mils thickness for use in light foot traffic areas.

SAMPLING DETAIL: Samples were selected at the location of manufacture by QAI representative Michael Fallon on July 16, 2021. Sample selection including the random selection of samples from minimum 4 dates of production, including various color options available for Tufdek PVC membranes.

DATE OF RECEIPT: Samples were received at QAI Tulsa, OK division on July 26, 2021.

TESTING PERIOD: Testing of the Tufdek PVC membrane occurred from September 1, 2021 until completion in December 2023.

AUTHORIZATION: QAI proposal 21JL04081R5 dated May 11, 2021 signed by Tuff Industries Inc. personnel Bryan Hughes on May 12, 2021.

TEST(S) REQUESTED: Testing for Canadian Construction Materials Centre (CCMC) Evaluation Purposes to the following method:

- MasterFormat: 07 54 19.01 *Technical Guide for PVC Sheet-Applied Decking Membranes (Exposed to Light Pedestrian Traffic).*

CONCLUSIONS: Tufdek PVC sheet-applied decking membranes of 60 mils thickness was found to comply with requirements of MasterFormat 07 54 19.01 as outlined in Table 1 of this report.

Prepared By:



Matt Lansdowne
VP of Operations

**Signed for and on behalf of
QAI Laboratories Inc.**



Rob Giona
Operations Manager

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SUMMARY OF TEST RESULTS

Table 1: Summary of Tufdek Results of Evaluation to MasterFormat: 07 54 19.01

SECTION	PROPERTY	UNIT	REQUIREMENT	RESULTS	
1.0 MATERIAL PROPERTIES	PVC Content	%	≥ 50	96.6	
	KEE Content	%	Report Value	3.5	
	Liquid Plasticizer (Molecular Weight)	g/mol	≥ 400	464	
	Inorganic Content	-	Report Value	Section 1.4	
	Reinforcement Structure and Material	-	Report Value	Section 1.5	
2.0 PHYSICAL PROPERTIES	Dimensional Tolerances (length)	%	-0%, +3%	0%	
	Dimensional Tolerances (width)	%	-0%, +3%	0.3%	
	Overall Thickness of PVC Membrane	mm	≥1.2 ± thickness	1.54	
	Coating Thickness	mm	≥ 0.4	MD: 0.66 CMD:0 .88	
3.0 MECHANICAL PROPERTIES	Breaking Strength	MD	N	≥ 890	1925
		CMD			1709
	Elongation as Received	MD	%	≥ 15	24
		CMD			27
	Elongation with Backing Removed	MD	%	-	N/A
		CMD			N/A
	Tear Resistance		N	-	N/A
	Tearing Strength (Tongue Tear)	MD	N	≥ 200	368
		CMD			436
	Static Puncture		kg	≥ 15 kg	> 15 kg
	Dynamic Puncture		J	> 10	> 10 J
	Low Temperature Impact		-	No Cracks -30°C	No Cracks
	Low Temperature Flexibility		-	No Cracks -40°C	No Cracks
	Dimensional Changes	MD	%	≤ 0.5	0.4
		CMD			0.0
	Abrasion Resistance		Cycles	≥ 5,000	≥ 5,000
	Slip Resistance		-	DCOF ¹ ≥ 0.42	0.55
	Fungi Resistance	Sustained Growth	-	No Growth	No Growth
		Discoloration	-	No Discoloration	No discoloration
	Fabric Adhesion to Membrane		kN/m	-	N/A
Crack Bridging	Tuff Low VOC	-	No cracking, splitting or holes	Plywood Pass	
				Concrete Pass	
	Tuff Roll-On			Plywood Pass	
			Concrete Pass		
	Tuff Trowel-On			Plywood Pass	
				Concrete Pass	

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Table 1: Summary of Tufdek Results of Evaluation to MasterFormat: 07 54 19.01 Continued

3.0 MECHANICAL PROPERTIES CONTINUED	Adhesion to Substrate	Plywood	kPa	Report Value	Low VOC: 186
					Roll-On: 179
		Concrete	kPa	Report Value	Trowel-On: 301
					Low VOC: 182
					Roll-On: 246
					Trowel-On: 347
	Fastener Pull Out Resistance		kN	Report Value	N/A Bonded
4.0 WATER RESISTANCE	Weight Change		%	≤ 3	2.6
	Retained Breaking Strength	MD	%	≥ 90	98
		CMD	%		96
	Retained Elongation	MD	%	≥ 90	120
CMD		%	115		
5.0 HEAT AGING RESISTANCE	Visual Inspection		-	No cracking, crazing or blistering	No Damage PASS
	Weight Change		%	≤ 5	0.5
	Retained Breaking	MD	%	≥ 90	98
		CMD	%		99
	Retained Elongation	MD	%	≥ 90	111
		CMD	%		118
	Low Temperature Impact		-	Report Value	-20°C
	Abrasion Resistance		Cycles	≥ 1,500	≥ 1,500
	Slip Resistance		-	DCOF ¹ ≥ 0.42	0.63
	Fungi Resistance	Sustained Growth	-	No Growth	No Growth
Discoloration		-	No Discoloration	No Discoloration	
Falling Weight Impact Resistance		J	Report Value	11.7 J	
6.0 ACCELERATED AGING RESISTANCE	Visual Inspection		-	No cracking, crazing or blistering	No Damage PASS
	Retained Breaking	MD	%	≥ 90	99
		CMD	%		96
	Retained Elongation	MD	%	≥ 80	93
		CMD	%		86
	Low Temperature Flexibility		-	Report Value	-25°C
	Abrasion Resistance		Cycles	≥ 1,500	≥ 1,500
Slip Resistance		-	DCOF ¹ ≥ 0.42	0.62	

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Table 1: Summary of Tufdek Results of Evaluation to MasterFormat: 07 54 19.01 Continued

7.0 SEAM STRENGTH	Reference	N	Report Value	1718
	Unconditioned	%	≥ 75	126
	After Heat Aging	%	≥ 70	124
	After 7 Days Boiling Water	%	≥ 70	122

Note 1: DCOF = wet dynamic coefficient of friction.

Detailed results can be found in QAI test report TJ8150-1A-Final dated February 7, 2024.

*****END OF SUMMARY REPORT*****

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