

TUFF INDUSTRIES INC.

TEST REPORT

SCOPE OF WORK

TESTING OF ECONODEK WATERPROOF VINYL DECKING IN ACCORDANCE WITH SELECTED SECTIONS OF CAN/CGSB-37.54-95, *POLYVINYL CHLORIDE ROOFING AND WATERPROOFING MEMBRANE*

REPORT NUMBER

103688438COQ-001

TEST DATE(S)

10/10/18 – 10/19/18

ISSUE DATE

10/22/18

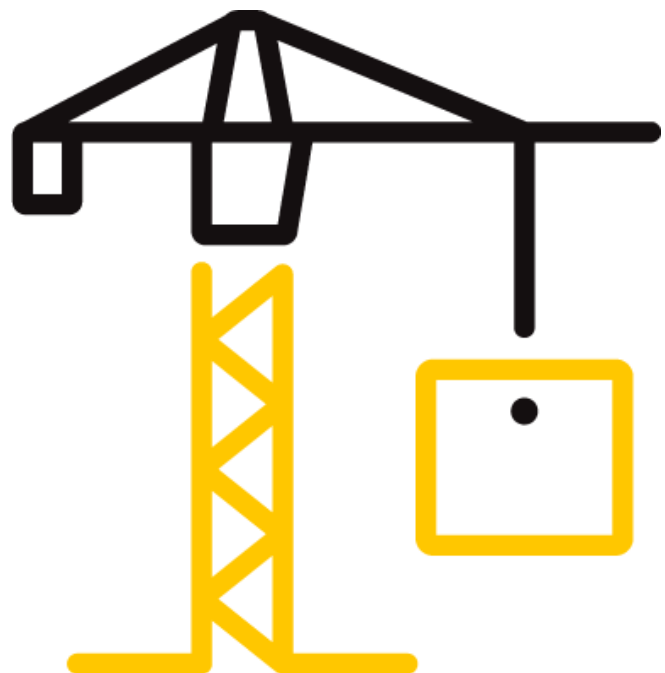
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TEST REPORT FOR TUFF INDUSTRIES INC.

Report No.: 103688438COQ-001

Date: 10/22/18

REPORT ISSUED TO

TUFF INDUSTRIES INC.

9570 Bottom Wood Lake Road
Lake Country, BC V4V 1S7
Canada



SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Tuff Industries Inc., 9570 Bottom Wood Lake Road, Lake Country, BC, V4V 1S7, Canada to perform testing in accordance with selected sections of CAN/CGSB-37.54-95, *Polyvinyl Chloride Roofing and Waterproofing*, on their Econodek Waterproof Vinyl Decking product. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at the Intertek test facility in Coquitlam, BC, Canada.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Chris Chang	REVIEWED BY:	Baldeep Sandhu
TITLE:	Senior Tech – Building & Construction	TITLE:	Manager – Building & Construction
SIGNATURE:		SIGNATURE:	
DATE:	10/22/18	DATE:	10/22/18

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SECTION 2

SUMMARY OF TEST RESULTS

DESCRIPTION	RESULT	REQUIREMENT	PASS/FAIL
Breaking Strength, kN/m			
- Machine Direction	41	≥ 35	Pass
- Cross Direction	41	≥ 35	Pass
Lap Joint Strength, % of As Received			
- 1.5 in. Liquid Weld			
- Machine Direction (end lap)	103	≥ 75	Pass
- Cross Direction (side lap)	103	≥ 75	Pass
- 1 in. Hot Air Weld			
- Machine Direction (end lap)	122	≥ 75	Pass
- Cross Direction (side lap)	107	≥ 75	Pass

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SECTION 3

TEST METHOD

The specimens were evaluated in accordance with the following:

CAN/CGSB-37.54-95, Polyvinyl Chloride Roofing and Waterproofing

SECTION 4

MATERIAL SOURCE

Test samples were provided by the client on October 5, 2018 (VAN1810051053-001), October 17, 2018 (VAN1810171448-001), and October 18, 2018 (VAN1810191153-001). Samples were not independently selected for testing.

SECTION 5

EQUIPMENT

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
P60553	Instron Universal Testing Machine	3382	08/03/19
P60610	Temperature and Humidity Logger	TR-72Ui	03/30/19
P60494	Stanley Tape Measure	FatMax	08/27/19

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Frank Gadea-Lopez	Intertek B&C
Chris Chang	Intertek B&C

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SECTION 7**TEST PROCEDURE****BREAKING STRENGTH**

Breaking strength tests were performed as specified in Section 7.3.4 of CAN/CGSB-37.54-95, using the grab method as described in ASTM D751-06 (2011), *Standard Test Methods for Coated Fabrics*. Five (5) specimens measuring 100 × 150 mm (4 × 6 in.) were prepared in both the machine and cross directions of the roll.

Each specimen was tested using a tensile testing machine equipped with self-aligning grips, with an initial separation of 75 mm (3 in.). The dimension of the gripping surfaces parallel to the direction of application of the load was 25 mm (1 in.); the dimension perpendicular to this was 25 mm (1 in.) for the face jaw, and 50 mm (2 in.) for the other. The jaw separation speed was 305 ± 0.2 mm (12 ± ½ in.)/min.

LAP JOINT STRENGTH

Lap joint strength tests were performed as specified in Section 7.3.5 of CAN/CGSB-37.54-95, using the grab method as described in ASTM D751-06 (2011). Samples were prepared by the client using Liquid Weld and Hot Air Weld methods. For the Liquid Weld, samples were prepared with a 1.5 in. lap seam; for the hot air weld, samples were prepared with a 1 in. of lap seam. Samples were prepared in both the machine direction (end lap) and cross direction (side lap). Testing was then conducted per the same procedures as described above for "Breaking Strength." The "% of as-received" was then calculated using the lap joint strength values obtained.

SECTION 8**TEST SPECIMEN DESCRIPTION**

The product was identified as Econodek Waterproof Vinyl Decking. The sample was provided in Marble Grey color (Lot# 108818, Roll# 8003, BC# 1088188003).

SECTION 9**TEST RESULTS**

See Appendix A for full set of test data.



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SECTION 10

CONCLUSION

The Tuff Industries Inc. Econodek Waterproof Vinyl Decking product identified and evaluated in this report has met the selected breaking strength and lap strength requirements of CAN/CGSB-37.54-95, *Polyvinyl Chloride Roofing and Waterproofing*.



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SECTION 11

TEST DATA (4 PAGES)

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Company	Tuff Industries Inc.	Technician(s)	Frank Gadea-Lopez
Project No.	G103688438	Reviewer	Baldeep Sandhu
Models	Econodek Waterproof Vinyl Decking	Start/End Date	October 10-19, 2018
Product Name	Same as above	Sample ID	VAN1810051053-001, VAN1810171448-001, VAN1810191153-001
Standard	CAN/CGSB-37.54-95, Polyvinyl Chloride Roofing and Waterproofing Membrane		

Test Data Package

Table of Contents

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Breaking Strength - As Received	2
Lap Joint Strength - 1.5 in. Liquid Weld	3
Lap Joint Strength - 1 in. Heat Weld	4

Test : **Breaking Strength**
 Date: 17-Oct-18
 Client: Tuff Industries Inc.
 Product Tested: **Econodek Waterproof Vinyl Decking**
 Condition: As received
 Test Method: CAN/CGSB-37.54-95, *Polyvinyl Chloride Roofing and Waterproofing Membrane*
 ASTM D751-06 (Reapproved 2011), *Standard Test Methods for Coated Fabrics*
 Sample Size: 102 mm (4 in) x 152 mm (6 in)
 Crosshead speed: 305 mm/min (12 in/min.)
 Init jaw separation: 75 mm (3.0 in)
 Equipment: Instron 3382 Universal Testing Machine (Intertek ID# P60553, cal due August 3, 2019)
 Bluehill Version 3.76.4926
 T&D TR72Ui ThermoRecorder (Intertek ID# P60610, cal due March 30, 2019)
 Time/Temp/RH: 2:30PM / 23.1°C / 49.0%

Proj. #: G103688438
 Technician: Frank Gadea-Lopez
 Reviewer: Baldeep Sandhu
 Location: Coquitlam, BC, Canada

	Load (lb)	Load (N)	Width (m)	Breaking Strength (kN/m)	Observations/comments
Machine Direction					
1	225	999.2	0.0254	39.3	Material breakage
2	239	1061.2	0.0254	41.8	Material breakage
3	232	1033.1	0.0254	40.7	Material breakage
4	236	1049.5	0.0254	41.3	Material breakage
5	232	1033.3	0.0254	40.7	Material breakage

Mean:	41
StdDev:	1
COV:	2%

	Load (lb)	Load (N)	Width (m)	Breaking Strength (kN/m)	Observations/comments
Cross Direction					
1	230	1024.1	0.0254	40.3	Material breakage
2	220	978.8	0.0254	38.5	Material breakage
3	231	1027.0	0.0254	40.4	Material breakage
4	240	1066.3	0.0254	42.0	Material breakage
5	242	1075.4	0.0254	42.3	Material breakage

Mean:	41
StdDev:	2
COV:	4%

Test : Lap Joint Strength
Date: 10-Oct-18
Client: Tuff Industries Inc.
Product Tested: Econodek with Tuff Liquid Weld at 1.5 in. Seam Width
Condition: As received
Test Method: CAN/CGSB-37.54-95, Polyvinyl Chloride Roofing and Waterproofing Membrane
 ASTM D751-06 (Reapproved 2011), Standard Test Methods for Coated Fabrics
Sample Size: 102 mm (4 in) x 152 mm (6 in)
Crosshead speed: 305 mm/min (12 in/min.)
Init jaw separation: 75 mm (3.0 in)
Equipment: Instron 3382 Universal Testing Machine (Intertek ID# P60553, cal due August 3, 2019)
 Bluehill Version 3.76.4926
 T&D TR72Ui ThermoRecorder (Intertek ID# P60610, cal due March 30, 2019)
Time/Temp/RH: 2:00PM / 23.1°C / 49.0%

Proj. #: G103688438
Technician: Frank Gadea-Lopez
Reviewer: Baldeep Sandhu
Location: Coquitlam, BC, Canada

	Load (lb)	Load (N)	Width (m)	Breaking Strength (kN/m)	Observations/comments
End Lap (Machine Direction)					
1	248	1101.0	0.0254	43.3	Material breakage; lap held together
2	258	1149.3	0.0254	45.2	Material breakage; lap held together
3	237	1054.3	0.0254	41.5	Material breakage; lap held together
4	220	978.6	0.0254	38.5	Material breakage; lap held together
5	230	1022.8	0.0254	40.3	Material breakage; lap held together
			Mean:	42	
			StdDev:	3	
			COV:	6%	
			% of As Received:	103%	

	Load (lb)	Load (N)	Width (m)	Breaking Strength (kN/m)	Observations/comments
Side Lap (Cross Direction)					
1	250	1113.9	0.0254	43.9	Material breakage; lap held together
2	244	1086.7	0.0254	42.8	Material breakage; lap held together
3	237	1054.4	0.0254	41.5	Material breakage; lap held together
4	235	1046.8	0.0254	41.2	Material breakage; lap held together
5	230	1025.2	0.0254	40.4	Material breakage; lap held together
			Mean:	42	
			StdDev:	1	
			COV:	3%	
			% of As Received:	103%	

Test : **Lap Joint Strength**
 Date: 17-Oct-18
 Client: Tuff Industries Inc.
 Product Tested: **Econodek with Hot Air Welded at 1 in. Seam Width**
 Condition: As received
 Test Method: CAN/CGSB-37.54-95, *Polyvinyl Chloride Roofing and Waterproofing Membrane*
 ASTM D751-06 (Reapproved 2011), *Standard Test Methods for Coated Fabrics*
 Sample Size: 102 mm (4 in) x 152 mm (6 in)
 Crosshead speed: 305 mm/min (12 in/min.)
 Init jaw separation: 75 mm (3.0 in)
 Equipment: Instron 3382 Universal Testing Machine (Intertek ID# P60553, cal due August 3, 2019)
 Bluehill Version 3.76.4926
 T&D TR72Ui ThermoRecorder (Intertek ID# P60610, cal due March 30, 2019)
 Time/Temp/RH: 3:00PM / 23.9°C / 49.0%

Proj. #: G103688438
 Technician: Frank Gadea-Lopez
 Reviewer: Baldeep Sandhu
 Location: Coquitlam, BC, Canada

	Load (lb)	Load (N)	Width (m)	Breaking Strength (kN/m)	Observations/comments
End Lap (Machine Direction)					
1	275	1221.9	0.0254	48.1	Material breakage; lap held together
2	267	1189.5	0.0254	46.8	Material breakage; lap held together
3	313	1391.0	0.0254	54.8	Material breakage; lap held together
4	295	1314.0	0.0254	51.7	Material breakage; lap held together
5	265	1180.9	0.0254	46.5	Material breakage; lap held together
				Mean:	50
				StdDev:	4
				COV:	7%
				% of As Received:	122%

	Load (lb)	Load (N)	Width (m)	Breaking Strength (kN/m)	Observations/comments
Side Lap (Cross Direction)					
1	249	1108.9	0.0254	43.7	Material breakage; lap held together
2	240	1067.7	0.0254	42.0	Material breakage; lap held together
3	254	1130.3	0.0254	44.5	Material breakage; lap held together
4	261	1162.6	0.0254	45.8	Material breakage; lap held together
5	245	1087.8	0.0254	42.8	Material breakage; lap held together
				Mean:	44
				StdDev:	1
				COV:	3%
				% of As Received:	107%



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SECTION 11
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/22/18	N/A	Original Report Issue