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ARK SYNTHETICS INC.
TEST REPORT

SCOPE OF WORK

REPORT OF ARCNO ROOFING UNDERLAYMENT TESTED IN ACCORDANCE WITH ASTM D8257/8257M-22, *STANDARD SPECIFICATION FOR MECHANICALLY ATTACHED POLYMERIC ROOF UNDERLAYMENT USED IN STEEP SLOPE ROOFING*

REPORT NUMBER
105714229COQ-012

TEST DATE(S)
03/13/25 – 04/16/25

ISSUE DATE
04/25/25

PAGES
34

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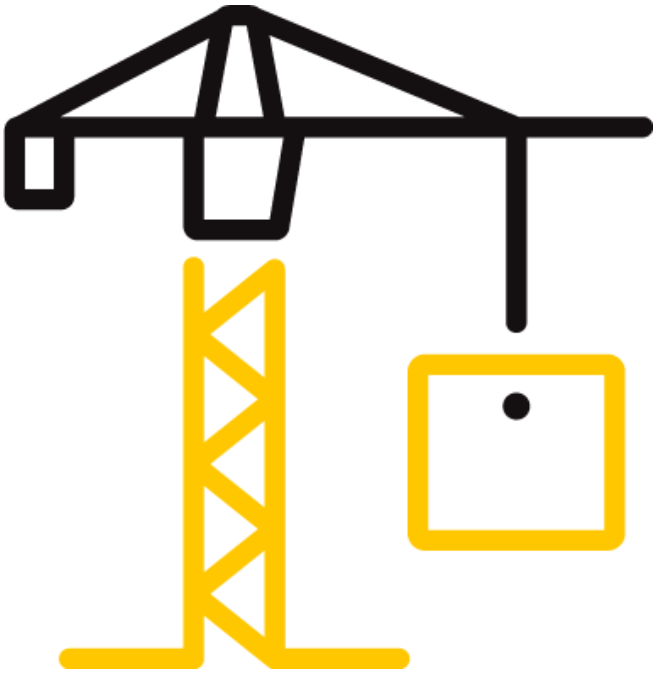

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TEST REPORT FOR ARK SYNTHETICS INC.

Report No.: 105714229COQ-012
Date: 4/25/25

REPORT ISSUED TO

ARK SYNTHETICS INC.
114-5788 Birney Ave
Vancouver, BC, V6S 0A9
Canada

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by ARK Synthetics Inc., 114 – 5788 Birney Ave, Vancouver, BC, V6S 0A9, Canada, to perform testing in accordance with ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*, on their Arcno Roofing Underlayment 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.

Unless differently required, Intertek reports apply the "Simple Acceptance" rule also called "Shared Risk approach," of ILAC-G8:09/2019, Guidelines on Decision Rules and Statements of Conformity.

For INTERTEK B&C:

COMPLETED BY:	Frank Gadea-Lopez	**REVIEWED BY:**	Baldeep Sandhu
TITLE:	Sr. Tech. – Building & Construction	**TITLE:**	Manager – Building & Construction
SIGNATURE:		**SIGNATURE:**	
DATE:	04/25/25	**DATE:**	04/25/25

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Report No.: 105714229COQ-012
Date: 4/25/25

SECTION 2

SUMMARY OF TEST RESULTS

PROPERTY	TEST RESULTS	REQUIREMENT	PASS/FAIL
Unrolling			
• At 0°C (32°F)	No visible cracking, tearing, or delamination	No visible cracking, tearing, or delamination	Pass
• At 60°C (140°F)			Pass
Pliability	No visible cracking or delamination	No visible cracking or delamination	Pass
Liquid Water Transmission	No sign of any wetness	No sign of any wetness	Pass
Water Vapor Transmission, perms	0.03	As Reported	As Reported
Linear Dimensional Change, %			
• Machine Direction	-1.4	-2.5 to 1	Pass
• Cross Direction	-1.7	-2.5 to 1	Pass
Tensile Strength, lbf/in.			
• As Received			
• Machine Direction	68	≥ 20	Pass
• Cross Direction	65	≥ 20	Pass
• After Thermal Cycling			
• Machine Direction	67	≥ 20	Pass
• Cross Direction	57	≥ 20	Pass
• After Laboratory Accelerated Weathering			
• Machine Direction	54	≥ 20	Pass
• Cross Direction	30	≥ 20	Pass
Tearing Strength, lbf			
• As Received			
• Machine Direction	17	≥ 15	Pass
• Cross Direction	18	≥ 15	Pass
• After Thermal Cycling			
• Machine Direction	20	≥ 15	Pass
• Cross Direction	17	≥ 15	Pass
• After Laboratory Accelerated Weathering			
• Machine Direction	16	≥ 15	Pass
• Cross Direction	18	≥ 15	Pass

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Fastener Pull-Through Resistance, lbf • As Received • After Thermal Cycling • After Laboratory Accelerated Weathering	 38 38 34	 ≥ 25 ≥ 25 ≥ 25	 Pass Pass Pass
Hydrostatic Resistance • As Received • After Thermal Cycling • After Laboratory Accelerated Weathering	 No water passed through any specimen No water passed through any specimen No water passed through any specimen	 No water shall pass through any specimen No water shall pass through any specimen No water shall pass through any specimen	 Pass Pass Pass
Thermal Cycling	No visible damage, such as peeling, chipping, crazing, splitting, cracking, flaking or pitting	No visible damage, such as peeling, chipping, crazing, splitting, cracking, flaking or pitting	Pass
Laboratory Accelerated Weathering	No visible damage, such as peeling, chipping, crazing, splitting, cracking, flaking or pitting	No visible damage, such as peeling, chipping, crazing, splitting, cracking, flaking or pitting	Pass

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SECTION 3
TEST METHOD

The specimens were evaluated in accordance with the following:

> **ASTM D8257/D8257M-22**, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

SECTION 4
MATERIAL SOURCE/INSTALLATION

Intertek representative, David Xu, randomly sampled the roofing underlayment product on December 28, 2024. The sample selection process was conducted at Gong Ye Yuan Jiangshan Town, Laixi City, Qingdao, 266603, China. The product was selected in accordance with recognized independent sampling procedures and were received at the Evaluation Center on February 7, 2025 (Coquitlam ID# VAN2502071234-001).

SECTION 5
EQUIPMENT

Calibration of test equipment was performed by Intertek B&C in accordance with ISO 17025 requirements.

ASSET #	DESCRIPTION	MODEL	CAL DUE DATE
P60557	Graphtec Temperature Data Logger	GL220	01/09/26
22079	Lunaire Environmental Chamber	CE0958-4	N/A
P60359	Thermotron Environmental Chamber	SM-32C	N/A
D7850	Hobo Onset Thermometer Recorder	UX100	05/06/25
D7849	Hobo Onset Temperature and Humidity Logger	MX1101	05/06/25
D7831	So-Low Freezer	NU40	N/A
P60624	Extech Stopwatch	365515	12/19/25
52650	Mitutoyo Digital Caliper	CD 8 CSX	06/28/25
9-0418	Setra 12000g Digital Scale	12000C	03/14/25
D2679	Fluke Thermometer	52II	11/19/25
D8405	Omega Sheathed Thermocouple	KMTSS-020G-6	N/A
52606	Setra 2000g Digital Scale	2000/Quartz	03/14/25
9-0473	ASTM E96 Chamber	N/A	N/A
D6932	Alnor Wind Vane Anemometer	RVA501	05/22/25

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P60613	Shell Lab	HF25-2	N/A
P52639	Mitutoyo 18 in. Digital Caliper	CD-18	08/21/25
P60553	Instron Universal Testing Machine with 100kN Capacity Load Cell	3382	10/11/25
D8435	Stanley Tape Measure	FatMax	05/10/25
D7827	Mullen Burst Tester	Model HJ	N/A
D8417	Dwyer Pressure Gauge 0-30psi	DPG-003	04/19/25
P60611	Q-Lab Xenon Arc Machine	Q-Sun	N/A
P60614	Q-Lab Calibration Radiometer	CR20	08/29/25

SECTION 6
LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Frank Gadea-Lopez	Intertek B&C

The above observer(s) witnessed part of the test program.

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SECTION 7
CONDITIONING

Unless stated otherwise, the test specimen materials were held in standard laboratory conditions for at least 24 hours at a temperature of 23 ± 2°C (73.4 ± 4°F) and relative humidity of 50 ± 10 %.

UNROLLING

Unrolling was conducted per Section 7.2 of ASTM D8257/D8257M-22. The roll of product was placed in a chamber operating at 0°C (32°F) for 24 hours. Within 5 min (± 1 min) at laboratory conditions, the product was then unrolled and evaluated for any evidence of cracking, or any stickiness that may cause tearing, delamination, or other damage. The test was repeated for a temperature of 60°C (140°F).

PLIABILITY

Pliability was conducted per Section 7.3 of ASTM D8257/D8257M-22. Five (5) specimens, each measuring 25.4 mm x 203 mm (1 in. x 8 in.), were prepared in both the machine and cross-machine directions of the roll. The specimens and a 3.2 mm (1/8 in.) diameter steel mandrel were conditioned in a cold chamber at a temperature of -10 ± 2°C (14 ± 4°F) for a minimum of 24 hours. After conditioning, each specimen was bent over the mandrel with the weathering side face up through a 90° angle within 2 ± 1 s. All specimens were visually inspected for any signs of cracking or delamination.

WATER VAPOR TRANSMISSION

Water vapor transmission was conducted per Section 7.4 of ASTM D8257/D8257M-22 with reference to ASTM E96/E96M-24a, *Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials*, Procedure B - Water Method. Four (4) circular specimens of the material were prepared for testing. Three (3) test dishes measuring 229 mm (9 in.) in diameter were filled with water to a level 19 ± 6 mm (¾ ± ¼ in.) from the specimen. The circular specimens were then attached to the top of each dish by sealing the perimeter of the material to the dish with a molten wax blend. The specimens were prepared with the product's exterior surface placed face down. An additional control specimen was prepared in an identical manner to the other three (3) test specimens with the exception that no water was placed in the dish. The four (4) assemblies were placed in a controlled chamber operating at a temperature and relative humidity of 23°C and 50% respectively. The assemblies were then weighed periodically until 8 (eight) data points were obtained. The water-vapor transmission was calculated as follows:

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WVT = G/tA
WVP = WVT/ΔP = WVT/S (R1-R2) O

where: WVT = rate of water vapor transmission, g/m²s
G = weight change, g
t = time during which G occurred
A = test area, m²

LIQUID WATER TRANSMISSION

Liquid water transmission was conducted per Section 7.5 of ASTM D8257/D8257M-22 with reference to ASTM D4869/D4869M-16a(2021), *Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing*. A total of two specimens were tested for liquid water transmission. For each test sample, a single thickness specimen was mounted on a 381 mm x 762 mm (15 in. × 30 in.) plywood board by overlapping and folding over all edges and stapling the specimen to the back of the board. The test involved positioning the test specimen at an angle of 14° with a showerhead directly overhead and 457 mm (18 in.) above the center of the test board. The showerhead was adjusted to impinge an area of approximately 254 mm to 305 mm (10 in. to 12 in.) diameter at a flow rate of 40 to 42 gal/hour. At the completion of a four hour running time, the water was shut off and the surfaces and edges of the test specimen were wiped free of excess dripping water. The test specimen was carefully cut open and examined for any signs of wetness on the underside, and also on the top of the plywood board. It was also inspected for any signs of visible deterioration by the action of the water.

LINEAR DIMENSIONAL CHANGE

Linear dimensional change was conducted per Section 7.6 of ASTM D8257/D8257M-22 with reference to ASTM D1204-14(2020), *Standard Test Method for Linear Dimensional Changes of Non-rigid Thermoplastic Sheeting or Film at Elevated Temperature*. Two (2) pieces of the underlayment, measuring 250 mm x 250 mm (9.8 in. x 9.8 in.), were cut, one from either edge and the other from the center of the sheet. The specimens were dusted with talc, placed in between two pieces of paper, then stored in oven at 85 ± 1°C (185 ± 2°F) for 24 h. After the oven exposure period, the specimens were reconditioned for a minimum of 1 h at a temperature of 23 ± 2°C (73.4 ± 4°F) and relative humidity of 50 ± 10 %. The linear dimensional change was derived by the difference between the opposite edges of the specimens. The linear dimensional change was calculated as follows:

Linear change, % = $[(D_f-D_o)/D_o]$ x100

Where: D_f = final length (or width) of specimen after test, mm
D_o = original length (or width) of specimen, mm

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TENSILE STRENGTH

Tensile strength was conducted per Section 7.7 of ASTM D8257/D8257M-22 with reference to ASTM D5035-11(2024), *Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method).* Five (5) specimens, each measuring 25 ± 1 mm (1 ± 0.02 in.) wide by 150 mm (6 in.) long, in both machine and cross directions were cut. Samples were placed in a universal Instron testing apparatus. The clamp separation was 75 ± 1 mm (3 ± 0.05 in.) and the rate of separation of 300 ± 10 mm/min (12 ± 0.5 in./min) was used. The maximum load of each specimen was recorded and reported. Testing was conducted as-received, after thermal cycling, and after laboratory accelerated weathering.

TEARING STRENGTH

Tearing strength was conducted per Section 7.8 of ASTM D8257/D8257M-22 with reference to ASTM D4533/D4533M-15(2023), *Standard Test Method for Trapezoid Tearing Strength of Geotextiles*. Five (5) specimens were prepared as shown in Fig. 1 in both the machine and cross-machine directions of the roll. Samples were placed into a universal Instron testing machine and secured with screw action grips. Specimens were clamped along the nonparallel sides of the trapezoid so that the end edges of the clamps are in line with the 25 mm (1 in.) long side of the trapezoid, and the cut is halfway between the clamps. The clamp separation was 25 mm (1 in.) and the rate of separation of 300 mm/min (12 in./min) was used. The average tear strength in each direction was reported. Testing was conducted as-received, after thermal cycling, and after laboratory accelerated weathering.

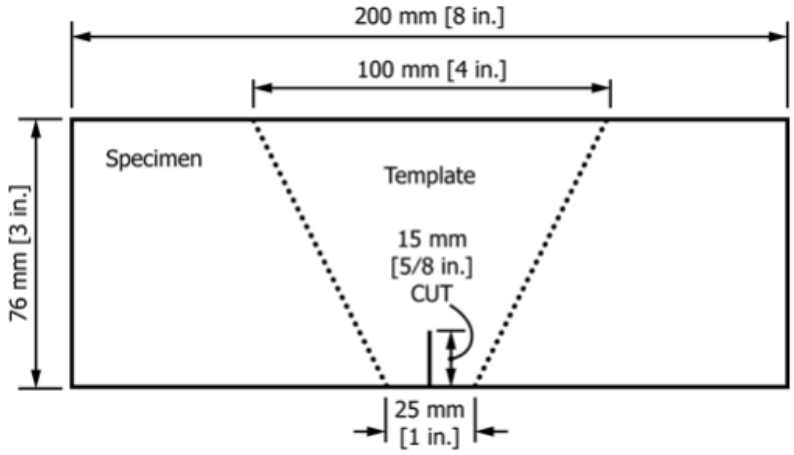

Figure 1. Trapezoid Tear Strength Test Specimen

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FASTENER PULL-THROUGH RESISTANCE

Fastener pull-through resistance was tested per Section 7.9 of ASTM D8257/D8257M-22 with reference to ASTM D228/D228M-21, *Standard Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Cap Sheets, and Shingles Used in Roofing and Waterproofing.* Ten (10) specimens, each measuring 98 ± 3 mm (3-7/8 ± 1/8 in.), were prepared for testing. Each test specimen was fixed in a pull-through resistance test assembly and a 37 mm (1-1/2 in.) long galvanized roofing nail with a 9.5 mm (3/8 in.) diameter head was pushed through the center of the test specimen. The test assembly was placed in a universal Instron testing machine and the nail was pulled through at a rate of 100 mm (4 in.)/min. The maximum force for each test was recorded and then averaged. Testing was conducted as-received, after thermal cycling, and after laboratory accelerated weathering.

HYDROSTATIC RESISTANCE

Hydrostatic resistance was tested per Section 7.10 of ASTM D8257/D8257M-22 with reference to ASTM D751-19, *Standard Test Methods for Coated Fabrics,* Procedure A, Procedure 2 using a Mullen-type tester. Five (5) specimens, each measuring 102 mm x 102 mm (4 in. x 4 in.), were prepared for testing. Each specimen was placed in the Mullen-type tester with their exterior face down towards the water and a pressure of 7 ± 1 kPa (1 ± 0.1 psi) was applied to the sample. The specified test pressure was held for a period of 5 min. Throughout the test, the specimen was inspected for any sign of water penetration through the underlayment. Testing was conducted as-received, after thermal cycling, and after laboratory accelerated weathering.

THERMAL CYCLING

Thermal cycling was tested per Section 7.11 of ASTM D8257/D8257M-22. A sufficient amount of material was prepared to allow preparation of tensile strength, tearing strength, fastener pull-through resistance, and hydrostatic resistance specimens from the exposed material after ten (10) cycles of the following: oven drying at 50 ± 1°C (120 ± 2°F) for 8 hours and within 5 min (± 1 min), freezing at -40 ± 1°C (-40 ± 2°F) for 16 hours. On weekends, the material was kept air-dry at 23 ± 2°C (73 ± 4°F) and 50 ± 10% RH. Upon completion of the thermal cycling, the material was inspected for any visible damage.

LABORATORY ACCELERATED WEATHERING

Laboratory accelerated weathering was tested per Section 7.12 of ASTM D8257/D8257M-22 with reference to ASTM D4798/D4798M-11(2021), *Standard Practice for Accelerated Weathering Test Conditions and Procedures for Bituminous Materials (Xenon-Arc Method),* Cycle A1. A sufficient amount of material was prepared to allow preparation of tensile strength, tearing strength, fastener pull-through resistance, and hydrostatic resistance specimens from the exposed material after 500 hours of xenon-arc exposure. The weathering was conducted per

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Cycle A1, which consisted of 51 min light-only exposure at 60°C black panel temperature, followed by 9 min light on and with water sprayed on the front of the specimens. Upon completion of the weathering, the material was inspected for any visible damage.

SECTION 8
TEST SPECIMEN DESCRIPTION

The product identified as Arcno Roofing underlayment is a mechanically attached synthetic roofing underlayment consisting of a non-woven polypropylene layer on the exposed side, a lamination layer, a polyethylene scrim applied with a coating layer on the sheathing side. It has a nominal weight of 110 gsm (2.25 lbs/100sq.ft).

SECTION 9
TEST RESULTS

A summary of the test results is presented in Section 2 of this test report. See Appendices for a full set of test data.

SECTION 10
CONCLUSION

The Ark Synthetics Inc. Arcno Roofing underlayment product identified and evaluated in this report has met the requirements contained in ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing.*

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SECTION 11

APPENDIX A – ARCNO TEST DATA (21 PAGES)

Company	Ark Synthetics Inc	Technician(s)	Frank Gadea-Lopez
Project No.	G105714229	Reviewer	Baldeep Sandhu
Models	Arcno Underlayment	Start/End Date	March 13- April 16,2025
Product Name	Same as above	Sample ID	VAN2502071234-001
Standard	**ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing***		

Test Data Package

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Test:	**Unrolling**	Project:	G105714229
Date:	16-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product Tested:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Test Method: ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

Samp size: Roll of membrane

Test Temps: 0°C (32°F)
60°C (140°F)

Equipment: Graphtec GL220 Data Logger (Intertek ID# P60557, cal due January 9, 2026)
Lunaire Environmental Chamber (Intertek ID# 22079)
Thermotron Environmental Chamber (Intertek ID# P60359)
Hobo Onset UX100 Thermometer Recorder (Intertek ID# D7850, cal due May 6, 2025)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Time/Temp/RH: 9:00AM / 22.1°C / 49.0%

Unroll-ability @ 0 °C Start: 9:00AM
Finish: 9:00AM

Rolled membrane put in cold chamber at 10°C for minimum 24 hours before being unrolled

Observations/Comments: **No visible cracking, tearing, or delamination of underlayment**

Unroll-ability @ 60 °C Start: 9:00AM
Finish: 9:00AM

Rolled membrane put in heat chamber at 60°C for minimum 24 hours before being unrolled

Observations/Comments: **No visible cracking, tearing, or delamination of underlayment**

Test:	**Pliability**	Project:	G105714229
Date:	19-Mar-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: As Received

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

Samp size: 1 in. x 8 in. (25mm x 200mm)

Test Temp: -10°C

Equipment: So-Low Upright Freezer (Intertek ID# D7831)
Graphtec GL220 Data Logger (Intertek ID# P60557, cal due January 9, 2026)
Extech Stopwatch (Intertek ID# P60624, cal due December 19, 2025)
Mitutoyo Digital Caliper (Intertek ID# 52650, cal due June 28, 2025)

Time/Temp/RH: 10:15AM / 22.1°C / 49.0%

Machine Direction		
Specimen	Specimen Orientation	Observations
1	Weathering side up	No cracking
2	Weathering side up	No cracking
3	Weathering side up	No cracking
4	Weathering side up	No cracking
5	Weathering side up	No cracking

Cross-machine Direction		
Specimen	Specimen Orientation	Observations
1	Weathering side up	No cracking
2	Weathering side up	No cracking
3	Weathering side up	No cracking
4	Weathering side up	No cracking
5	Weathering side up	No cracking

Test:	**Water Vapor Transmission**	Project:	G105714229
Date:	15-Mar-25	Eng/Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Test Methods: ASTM E96/E96M-16, *Standard Test Methods for Water Vapour Transmission of Materials*

Test Procedure: **Method B (Wet Cup Method)**

Conditioning: 24 hours at a temperature of 23 ± 2°C and relative humidity of 50 ± 2%

Equipment: Ohaus PX4202 Digital Scale (Intertek ID# D7847, cal due January 22, 2026)
Test Chamber (Intertek ID# 9-0473)
Mitutoyo Digital Caliper (Intertek ID# 52650, cal due June 28, 2025)
Alnor Velometer (Intertek ID# D6932, cal due May 22, 2025)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

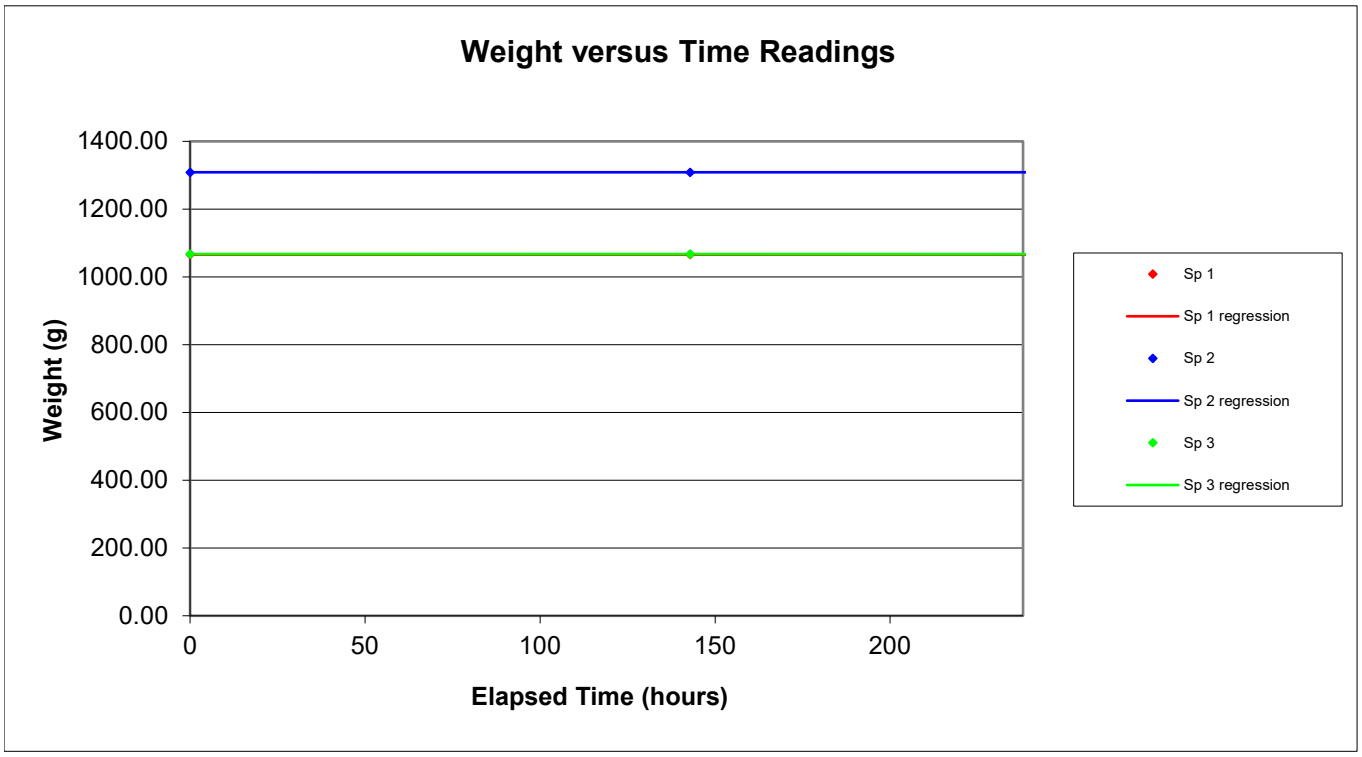
Measurement	Specimen		
	1	2	3
Mean Barometric Pressure (kPa)	101.84	101.84	101.84
Mean Air Temperature (°C)	23.0	23.0	23.0
Mean Saturation Vapour Pressure[1] (Pa)	2855	2855	2855
Mean Relative Humidity in chamber (%)	48.6	48.6	48.6
Relative Humidity in test dish (%)	100	100	100
Specimen Weight Change (g)	0.236	0.196	0.286
Moisture Gain of Dessicant (%)	n/a	n/a	n/a
Moisture Gain Control Limit (%)	n/a	n/a	n/a
Test Dish Diameter (mm)	230.0	230.0	230.0
Test Area (m²)	4.15E-02	4.15E-02	4.15E-02
Gradient of weight/time graph (g/hour)	4.09E-04	3.32E-04	5.07E-04
Specimen Mean Thickness (mm)	0.07	0.05	0.07
Uncorrected Water Transmission (g/hour.m²)	9.85E-03	8.00E-03	1.22E-02
Uncorrected Water Permeance (ng/Pa.s.m²)	1.87E+00	1.51E+00	2.31E+00
Permeability of Still Air (ng/Pa.s.m)	1.94E+02	1.94E+02	1.94E+02
Permeance of Still Air (ng/Pa.s.m²)	1.02E+04	1.02E+04	1.02E+04
Vapor Resistance of Still Air (m².s.Pa/kg)	9.78E+07	9.78E+07	9.78E+07
Surface Resistances (m².s.Pa./kg)	4.00E+07	4.00E+07	4.00E+07
Total Still Air and Specimen Surface (m².s.Pa/kg)	1.38E+08	1.38E+08	1.38E+08
Four Times Test Area Divided By Perimeter (m)	2.30E-01	2.30E-01	2.30E-01
Excess Water Transmission Due to Mask (%)	0.03	0.02	0.03
Excess Water Permeance Due to Mask (ng/Pa.s.m²)	5.19E-04	3.05E-04	6.20E-04
Mask-corrected Water Permeance (ng/Pa.s.m²)	1.86E+00	1.51E+00	2.31E+00
Water Vapour Transmission (g/hour.m²)	9.85E-03	8.00E-03	1.22E-02
Water Vapour Permeance (ng/Pa.s.m²)	1.87E+00	1.51E+00	2.31E+00
Water Vapour Permeability (ng/Pa.s.m)	1.35E-04	7.95E-05	1.62E-04

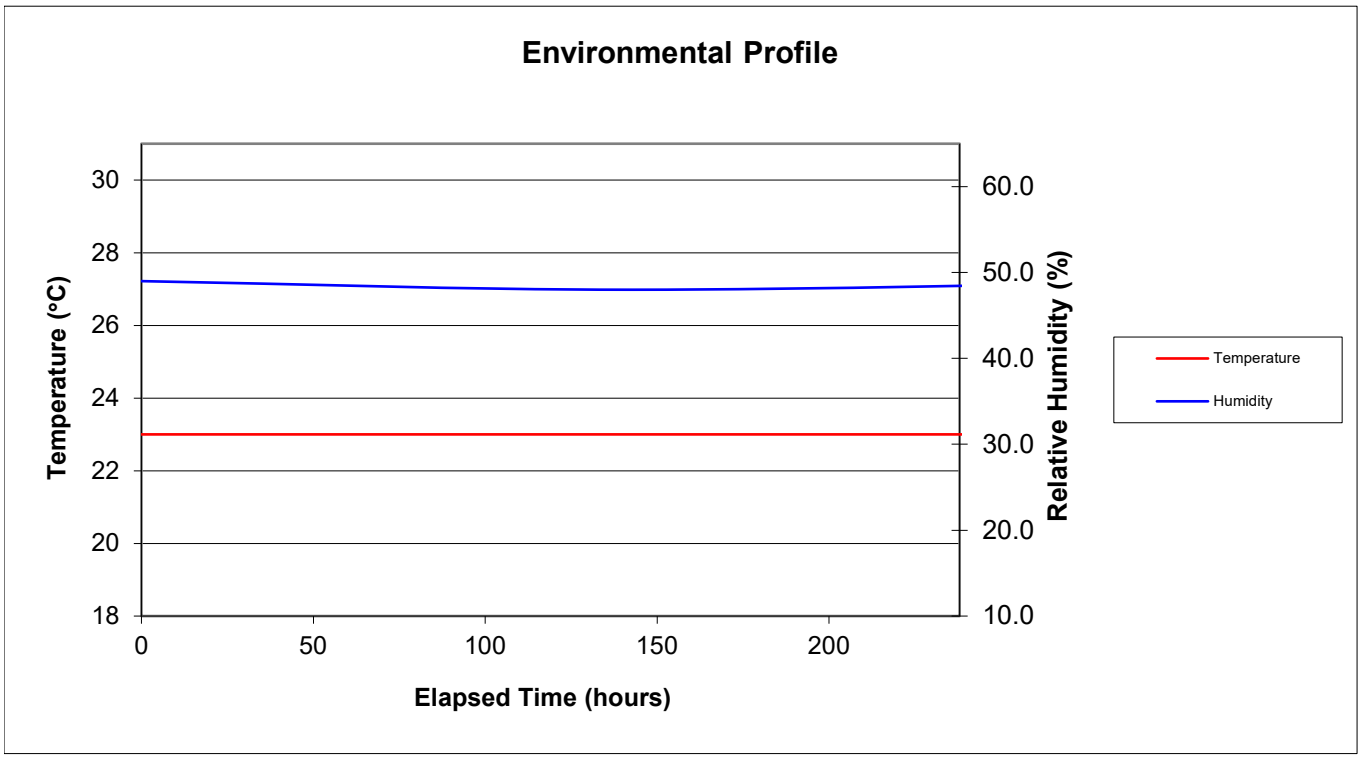
[1]Estimated by the Clausius-Clapeyron equation

Test Result Summary	Metric units	Imperial Units
Water Vapor Transmission	1.00E-02 g/hr.m²	1.43E-02 grns/hr.ft²
	2.40E-01 g/day.m²	3.44E-01 grns/day.ft²
Water Vapor Permeance	1.90E+00 ng/Pa.s.m²	3.32E-02 perms
Water Vapor Permeability	1.25E-04 ng/Pa.s.m	8.63E-05 Perm inch

Note: WVTR is near zero and weight loss is so small that requirements of Section 6.3.2.2 for balance readability cannot be fulfille

Test:	**Water Vapor Transmission**	Project:	G105714229
Date:	15-Mar-25	Eng/Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
	Arcno Underlayment	Location:	Coquitlam, BC, Canada





Total Quality. Assured.

Test:	**Liquid Water Transmission**	Project #:	G105714229
Date:	18-Mar-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product Tested:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Test Method: ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D4869/D4869-16a (2021), *Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in Steep Slope Roofing*

Samp size: 380 mm x 760 mm (15 in. x 30 in.)

Water Flow: 42-44 cm^3/s (40-42 gal/h)

Equipment: Setra 12000C Digital scale (Intertek ID# 9-0418, cal due March 14, 2025)
Extech Stopwatch (Intertek ID# P60623, cal due November 19, 2025)
Fluke 52II Thermometer (Intertek ID# D2679, cal due November 19, 2025)
Omega Sheathed Thermocouple (Intertek ID# D8405)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Time/Temp/RH: 9:00AM / 23.1°C / 50.0%

Water Calibration:

Water Collected:	2550.3	mL
Time:	60	s
Water Flow:	42.5	mL/s = cm^3/s

Water Temperature: 18.5°C

Sample	Observations
1	No sign of any wetness
2	No sign of any wetness

Total Quality. Assured.

Test:	**Linear Dimensional Change**	Project:	G105714229
Date:	18-Mar-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Method: ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D1204-14(2020), *Standard Test Method for Linear Dimensional Changes of Nonrigid Thermoplas Sheeting or Film at Elevated Temperature*

Exposure: 24 hour @ 85 ± 1°C, followed by a minimum of 1 hr at 23°C and 50% RH.

Equipment: Shell Lab Oven (Intertek ID# P60613)
18 in. Mitutoyo Digital Caliper (Intertek ID# 52639, cal due August 21, 2025)
Graphtec GL220 Data Logger (Intertek ID# P60557, cal due January 9, 2026)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Specimen Size: 250 x 250 mm

Ambient: 9:00AM / 23.1°C / 49.0%

Initial Measurement		
Specimen	Length (mm)	Width (mm)
1 (edge)	254.44	254.19
2 (mid)	254.42	254.10
After Exposure - 24 hrs		
Specimen	Length (mm)	Width (mm)
1 (edge)	250.68	250.58
2 (mid)	251.24	249.33

Dimensional Stability		
Specimen	Length (%)	Width (%)
	24 hrs	24 hrs
1 (edge)	-1.48%	-1.42%
2 (mid)	-1.25%	-1.88%
Mean:	**-1.36%**	**-1.65%**
StdDev:	0.0	0.0

*Note: Negative value- shrinkage
Postive value- expansion

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Total Quality. Assured.

Test:	**Tensile Strength**	Project:	G105714229
Date:	18-Mar-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: As Received

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D5035-11(Reapproved 2019), *Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)*

Sample size: 1 in. x 6 in. (25.4 mm x 152.4 mm)

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Init. Jaw sep: 3 ins

Crosshead speed: 12 ins/minute

Time/Temp/RH: 8:30AM / 22.1°C / 49.0%

Machine direction

Sample #	Width (in)	Max Load (lbf)	Tensile Strength (lbf/in)
1	1.00	68.75	68.75
2	1.00	68.19	68.19
3	1.00	69.93	69.93
4	1.00	67.05	67.05
5	1.00	65.05	65.05
	Mean:	**67.79**	**67.79**
	StdDev:	1.85	1.85
	COV:	2.7%	2.7%

Cross direction

Sample #	Width (in)	Max Load (lbf)	Tensile Strength (lbf/in)
1	1.00	64.21	64.21
2	1.00	66.10	66.10
3	1.00	63.50	63.50
4	1.00	64.50	64.50
5	1.00	65.62	65.62
	Mean:	**64.78**	**64.78**
	StdDev:	1.06	1.06
	COV:	1.6%	1.6%

Note - Elongation was not calculated as not required by specification.

Total Quality. Assured.

Test:	**Tensile Strength - After Thermal Cycling**	Project:	G105714229
Date:	9-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: After Thermal Cycling

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D5035-11(Reapproved 2019), *Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)*

Sample size: 1 in. x 6 in. (25.4 mm x 152.4 mm)

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Init. Jaw sep: 3 ins

Crosshead speed: 12 ins/minute

Time/Temp/RH: 7:24AM / 23.0°C / 48.0%

Machine direction

Sample #	Width (in)	Max Load (lbf)	Tensile Strength (lbf/in)
1	1.00	67.26	67.26
2	1.00	63.05	63.05
3	1.00	65.35	65.35
4	1.00	64.29	64.29
5	1.00	72.87	72.87
	Mean:	**66.56**	**66.56**
	StdDev:	3.85	3.85
	COV:	5.8%	5.8%

Cross direction

Sample #	Width (in)	Max Load (lbf)	Tensile Strength (lbf/in)
1	1.00	57.52	57.52
2	1.00	66.88	66.88
3	1.00	55.67	55.67
4	1.00	51.90	51.90
5	1.00	52.04	52.04
	Mean:	**56.80**	**56.80**
	StdDev:	6.12	6.12
	COV:	10.8%	10.8%

Note - Elongation was not calculated as not required by specification.

Total Quality. Assured.

Test:	**Tensile Strength - After UV**	Project:	G105714229
Date:	9-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: After Accelerated Weathering

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D5035-11(Reapproved 2019), *Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)*

Sample size: 1 in. x 6 in. (25.4 mm x 152.4 mm)

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Init. Jaw sep: 3 ins

Crosshead speed: 12 ins/minute

Time/Temp/RH: 7:40AM / 23.0°C / 49.0%

Machine direction

Sample #	Width (in)	Max Load (lbf)	Tensile Strength (lbf/in)
1	1.00	51.64	51.64
2	1.00	62.07	62.07
3	1.00	60.09	60.09
4	1.00	45.51	45.51
5	1.00	51.69	51.69
	Mean:	**54.20**	**54.20**
	StdDev:	6.80	6.80
	COV:	12.5%	12.5%

Cross direction

Sample #	Width (in)	Max Load (lbf)	Tensile Strength (lbf/in)
1	1.00	30.60	30.60
2	1.00	30.08	30.08
3	1.00	28.73	28.73
4	1.00	29.05	29.05
5	1.00	31.16	31.16
	Mean:	**29.92**	**29.92**
	StdDev:	1.03	1.03
	COV:	3.4%	3.4%

Note - Elongation was not calculated as not required by specification.

Total Quality. Assured.

Test:	**Tearing Strength**	Project:	G105714229
Date:	15-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: As Received

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D4533/D4533M-15, *Standard Test Method for Trapezoid Tearing Strength of Geotextiles*

Sample size: 3 in. x 8 in. (76.2 mm x 201.6 mm)

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Init. Jaw sep: 1 ins

Crosshead speed: 12 ins/minute

Time/Temp/RH: 10:57AM / 23.0°C / 50.0%

Machine direction

Sample #	Max Load (lbf)
1	20.21
2	14.56
3	14.79
4	17.31
5	17.86
Mean:	**16.95**
StdDev:	2.34
COV:	13.8%

Cross direction

Sample #	Max Load (lbf)
1	20.54
2	20.68
3	15.92
4	15.46
5	15.91
Mean:	**17.70**
StdDev:	2.66
COV:	15.0%

Total Quality. Assured.

Test:	**Tearing Strength - After Thermal Cycling**	Project:	G105714229
Date:	14-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: After Thermal Cycling

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

ASTM D4533/D4533M-15, *Standard Test Method for Trapezoid Tearing Strength of Geotextiles*

Sample size: 3 in. x 8 in. (76.2 mm x 201.6 mm)

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245

Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Init. Jaw sep: 1 ins

Crosshead speed: 12 ins/minute

Time/Temp/RH: 2:40PM / 23.1°C / 49.0%

Machine direction

Sample #	Max Load (lbf)
1	20.49
2	21.00
3	18.70
4	14.76
5	22.82
Mean:	**19.55**
StdDev:	3.06
COV:	15.6%

Cross direction

Sample #	Max Load (lbf)
1	17.23
2	16.32
3	15.77
4	15.90
5	20.24
Mean:	**17.09**
StdDev:	1.85
COV:	10.8%

Total Quality. Assured.

Test:	**Tearing Strength - After UV**	Project:	G105714229
Date:	15-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: After Accelerated Weathering

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

ASTM D4533/D4533M-15, *Standard Test Method for Trapezoid Tearing Strength of Geotextiles*

Sample size: 3 in. x 8 in. (76.2 mm x 201.6 mm)

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245

Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Init. Jaw sep: 1 ins

Crosshead speed: 12 ins/minute

Time/Temp/RH: 9:05AM / 23.1°C / 49.0%

Machine direction

Sample #	Max Load (lbf)
1	17.19
2	16.42
3	18.67
4	15.44
5	14.27
Mean:	**16.40**
StdDev:	1.68
COV:	10.2%

Cross direction

Sample #	Max Load (lbf)
1	14.93
2	18.24
3	16.60
4	17.00
5	22.16
Mean:	**17.79**
StdDev:	2.72
COV:	15.3%

Total Quality. Assured.

Test:	**Fastener Pull-Through Resistance**	Project:	G105714229
Date:	18-Mar-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: As Received

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D228/D228M-21, *Standard Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Ca Sheets, and Shingles Used in Roofing and Waterproofing*

Sample size: 4 in. x 4 in. (102 mm x 102 mm)

Fastener: 37 mm (1-1/2 in.) long, 9.5 mm (3/8 in.) head diameter galvanized roofing nail

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Crosshead speed: 4 ins/minute

Time/Temp/RH: 9:00AM / 22.1°C / 50.0%

Sample #	Max Load	
	(lbf)	(N)
1	35.20	156.6
2	32.58	144.9
3	44.90	199.7
4	36.35	161.7
5	34.98	155.6
6	44.38	197.4
7	35.20	156.6
8	42.26	188.0
9	38.38	170.7
10	38.55	171.5
Mean:	**38.28**	**170.3**
StdDev:	4.26	18.9
COV:	11.1%	11.1%

Total Quality. Assured.

Test:	**Fastener Pull-Through Resistance - After Thermal Cycling**	Project:	G105714229
Date:	14-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Specimen ID: After Thermal Cycling

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

ASTM D228/D228M-21, *Standard Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Ca Sheets, and Shingles Used in Roofing and Waterproofing*

Sample size: 4 in. x 4 in. (102 mm x 102 mm)

Fastener: 37 mm (1-1/2 in.) long, 9.5 mm (3/8 in.) head diameter galvanized roofing nail

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245

Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Crosshead speed: 4 ins/minute

Time/Temp/RH: 10:30AM / 23.1°C / 50.0%

Sample #	Max Load	
	(lbf)	(N)
1	33.05	147.0
2	37.73	167.8
3	45.06	200.4
4	39.93	177.6
5	41.06	182.6
6	44.26	196.9
7	37.42	166.5
8	38.78	172.5
9	30.70	136.5
10	36.72	163.4
Mean:	**38.47**	**171.1**
StdDev:	4.48	19.9
COV:	11.6%	11.6%

Total Quality. Assured.

Test:	**Fastener Pull-Through Resistance - After UV**	Project:	G105714229
Date:	14-Apr-25	Eng./Tech:	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada
Specimen ID:	After UV		

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D228/D228M-21, *Standard Test Methods for Sampling, Testing, and Analysis of Asphalt Roll Roofing, Ca Sheets, and Shingles Used in Roofing and Waterproofing*

Sample size: 4 in. x 4 in. (102 mm x 102 mm)

Fastener: 37 mm (1-1/2 in.) long, 9.5 mm (3/8 in.) head diameter galvanized roofing nail

Equipment: Instron 3382 Universal Test Apparatus with 100 kN Load Cell (Intertek ID# P60553, cal due October 11, 2025), BlueHill Version: 4.34.30245
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Stanley FatMax Tape Measure (Intertek ID# D8435, cal due May 10, 2025)

Crosshead speed: 4 ins/minute

Time/Temp/RH: 1:15AM / 22.1°C / 50.0%

Sample #	Max Load	
	(lbf)	(N)
1	31.82	141.5
2	38.21	170.0
3	40.71	181.1
4	38.08	169.4
5	47.40	210.8
6	28.76	127.9
7	29.66	131.9
8	29.70	132.1
9	24.21	107.7
10	29.98	133.4
Mean:	**33.85**	**150.6**
StdDev:	6.99	31.1
COV:	20.7%	20.7%

Total Quality. Assured.

Test: **Hydrostatic Resistance**
Date: 19-Mar-25
Client: Ark Synthetics Inc
Product Tested **Arcno Underlayment**
Test Method: ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D751-19, *Standard Test Methods for Coated Fabrics*
Samp size: 102 mm x 102 mm (4 in. x 4 in.)
Pressure: 7 ± 1 kPa (1 ± 0.1 psi) for 5 min
Equipment: Mullen Burst Tester (Intertek ID# D7827)
Dwyer Pressure Gauge (Intertek ID# D8366, cal due October 22, 2025)
Extech Digital Stop Watch (Intertek ID# P60624, cal due December 19, 2025)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Time/Temp/RH 10:30AM / 23.1°C / 50.0%

Project #: G105714229
Eng./Tech: Frank Gadea-Lopez
Reviewer: Baldeep Sandhu
Location: Coquitlam, BC, Canada

Sample	Observations
1	No sign of water through coated fabric after 5 minutes
2	No sign of water through coated fabric after 5 minutes
3	No sign of water through coated fabric after 5 minutes
4	No sign of water through coated fabric after 5 minutes
2	No sign of water through coated fabric after 5 minutes

Test: **Hydrostatic Resistance After Thermal Cycling**
Date: 10-Apr-25
Client: Ark Synthetics Inc
Product Tested **Arcno Underlayment**
Test Method: ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D751-19, *Standard Test Methods for Coated Fabrics*
Samp size: 102 mm x 102 mm (4 in. x 4 in.)
Pressure: 7 ± 1 kPa (1 ± 0.1 psi) for 5 min
Equipment: Mullen Burst Tester (Intertek ID# D7827)
Dwyer Pressure Gauge (Intertek ID# D8366, cal due October 22, 2025)
Extech Digital Stop Watch (Intertek ID# P60624, cal due December 19, 2025)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Time/Temp/RH 10:15AM / 22.1°C / 50.0%

Project #: G105714229
Eng./Tech: Frank Gadea-Lopez
Reviewer: Baldeep Sandhu
Location: Coquitlam, BC, Canada

Sample	Observations
1	No sign of water through coated fabric after 5 minutes
2	No sign of water through coated fabric after 5 minutes
3	No sign of water through coated fabric after 5 minutes
4	No sign of water through coated fabric after 5 minutes
2	No sign of water through coated fabric after 5 minutes

Total Quality. Assured.

Test: **Hydrostatic Resistance After UV Weathering**
Date: 10-Apr-25
Client: Ark Synthetics Inc
Product Tested **Arcno Underlayment**
Test Method: ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM D751-19, *Standard Test Methods for Coated Fabrics*
Samp size: 102 mm x 102 mm (4 in. x 4 in.)
Pressure: 7 ± 1 kPa (1 ± 0.1 psi) for 5 min
Equipment: Mullen Burst Tester (Intertek ID# D7827)
Dwyer Pressure Gauge (Intertek ID# D8366, cal due October 22, 2025)
Extech Digital Stop Watch (Intertek ID# P60624, cal due December 19, 2025)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)
Time/Temp/RH 10:15AM / 22.1°C / 50.0%

Project #: G105714229
Eng./Tech: Frank Gadea-Lopez
Reviewer: Baldeep Sandhu
Location: Coquitlam, BC, Canada

Sample	Observations
1	No sign of water through coated fabric after 5 minutes
2	No sign of water through coated fabric after 5 minutes
3	No sign of water through coated fabric after 5 minutes
4	No sign of water through coated fabric after 5 minutes
2	No sign of water through coated fabric after 5 minutes

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Total Quality. Assured.

Test:	**Thermal Cycling**	Project:	G105714229
Date:	19-Mar-25	Eng./Tech:	Frank Gadea-Lopez / Chris Chang
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada
Specimen ID:	**As Received**		

Test Standard(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*

Equipment: Lunaire (Intertek ID# 22079)
So-Low Freezer (Intertek ID# D7851)
Graphtec GL220 Data Logger (Intertek ID# P60557, cal due January 9, 2026)

Exposure cycle: Oven drying at a temperature of 50 ± 1°C for 8 hours
Freezing at a temperature of -40 ± 1°C for 16 hours

Date	Cycle	Freezing	Oven Drying		Freezing
		Out	In	Out	In
19-Mar-25	1		7:30 AM	3:30 PM	3:30 PM
20-Mar-25	2	7:30 AM	7:30 AM	3:30 PM	3:30 PM
21-Mar-25	3a	7:30 AM	7:30 AM	3:30 PM (W)	
24-Mar-25	3b				3:30 PM
25-Mar-25	4	7:30 AM	7:30 AM	3:30 PM	3:30 PM
26-Mar-25	5	7:30 AM	7:30 AM	3:30 PM	3:30 PM
27-Mar-25	6a	7:30 AM	7:30 AM	3:30 PM	3:30 PM
28-Mar-25	6b	7:30 AM	7:30 AM	3:30 PM (W)	
31-Mar-25	7				3:30 PM
1-Apr-25	8	7:30 AM	7:30 AM	3:30 PM	3:30 PM
2-Apr-25	9	7:30 AM	7:30 AM	3:30 PM	3:30 PM
3-Apr-25	10a	7:30 AM	7:30 AM	3:30 PM	3:30 PM
4-Apr-25	10b	7:30 AM	7:30 AM	3:30 PM (W)	
7-Apr-25					3:30 PM

Comments: No visible damage to the specimens after thermal cycling.

Note: (W) designates a weekend where samples were kept at 23 ± 2°C and 50 ± 10% RH.

Total Quality. Assured.

Test:	**Laboratory Accelerated Weathering**	Project#:	G105714229
Date:	14-Mar-25	Technician(s):	Frank Gadea-Lopez
Client:	Ark Synthetics Inc	Reviewer:	Baldeep Sandhu
Product:	**Arcno Underlayment**	Location:	Coquitlam, BC, Canada

Test Method(s): ASTM D8257/D8257M-22, *Standard Specification for Mechanically Attached Polymeric Roof Underlayment Used in Steep Slope Roofing*
ASTM G155-21, *Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materia*

Conditioning: 48 hours at a temperature of 23 ± 2°C and relative humidity of 50 ± 5%

Equipment: Q-Lab Q-Sun Xenon Arc Machine (Intertek ID# P60611)
Q-Lab CR20 Calibration Radiometer (Intertek ID# P60614, cal due August 29, 2025)
Hobo Onset MX1101 Temperature and Humidity Logger (Intertek ID# D7849, cal due May 6, 2025)

Duration: 500 hours

Time/Temp/RH: 2:00PM / 22.1°C / 50.0%

Total hrs @ start:	95498.9			Date	14-Mar-25
Total hrs @ finish:	95998.9			Date	4-Apr-25
Total hrs. of operation	**500**				

Date	Hours	Total hrs.	Comments/Observations
14-Mar-25	95498.9	0.0	Test started
4-Apr-25	95998.9	500.0	Test completed

Observations: No visible damage, such as peeling, chipping, crazing, splitting, cracking, flaking or pitting

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TEST REPORT FOR ARK SYNTHETICS INC.
Report No.: 105714229COQ-012
Date: 4/25/25

SECTION 12
REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	04/25/25	N/A	Original Report Issue