SPORTS LABS

TESTING TECHNOLOGY FOR SPORT

LABORATORY TEST REPORT

2” BLENDED TURF WITH SAND, SBR, #3 8/16 & 4L 20/40 ONETURF

Report Number: 96790-8851

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Foreword

Sports Labs LLC has prepared this report with all reasonable skill, care, and diligence within the contract terms with the Client and within the limitations of the resources devoted to it. This report is confidential to the Client and Sports Labs LLC accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk. This report shall not be used for engineering or contractual purposes unless signed by the Author and the Checker and the report status is “Final”. Draft reports may be subject to change.

The report shall not be reproduced except in full without the approval of the laboratory to ensure that parts of a report are not taken out of context.

The test results contained within this report represent the values measured on the samples received and tested under laboratory conditions and carried out per the relevant specification(s).

If the measurement lies within the lower and upper specification limit range, the result will be accepted as meeting the required criteria. If it falls outside this range, it will be rejected as non-conforming. Measurement uncertainty is not applied as a guard band in this decision-making process.

This report is not an official National Governing Body report and does not imply NGB approval.

*Some tests may not be within our current ISO 17025 scope of accreditation.

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9/25/2025

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9/25/2025

Introduction

Sports Labs conducted laboratory performance testing per the EN, ASTM & FIFA test methods listed below.

Test methods

- **ASTM 3189-20** – Determination of Shock Absorption
- **ASTM 3189-20** – Determination of Vertical Deformation
- **EN 15301:2007** – Determination of Rotational Resistance
- **EN 12235:2013** – Determination of Ball Rebound
- **ASTM F1936-19** – Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field
- **ASTM F3146-18** – Standard Test Method for Impact Attenuation of Turf Playing Systems Designated for Rugby
- **EN 12616:2013 –** Surfaces for sports areas – Determination of water infiltration rate
- **EN 12234: 2013** – Determination of Ball Roll
- **ISO 8543:1998** – Textile floor coverings – Methods for determination of mass
- **ISO 1763:2020 –** Determination of the number of tufts and/or loops per unit length and per unit area
- **ISO 2549:1972** – Hand-knotted carpets — Determination of tuft leg length above the woven ground
- **ISO 4919:2012** – Determination of tuft withdrawal force
- **ISO 13934-1:2013** – Determination of maximum force and elongation at maximum force using the strip method
- **FIFA 2024-12**– Procedure for the determination of heat on artificial turf products
- **EN 933-1:2012** – Tests for geometrical properties of aggregates. Determination of particle size distribution.
- **EN 14955:2005** – Surfaces for sports areas. Determination of composition and particle shape of unbound mineral surfaces for outdoor sports areas
- **EN 1097-3** – Standard for the determination of the loose bulk density of dry aggregate and the calculation of the voids.
- **EN 14955:2005** – Standard for determination of composition and particle shape of unbound mineral surfaces for outdoor sports areas.
- **FIFA method 25** – Procedure for the measurement of yarn dimensions.

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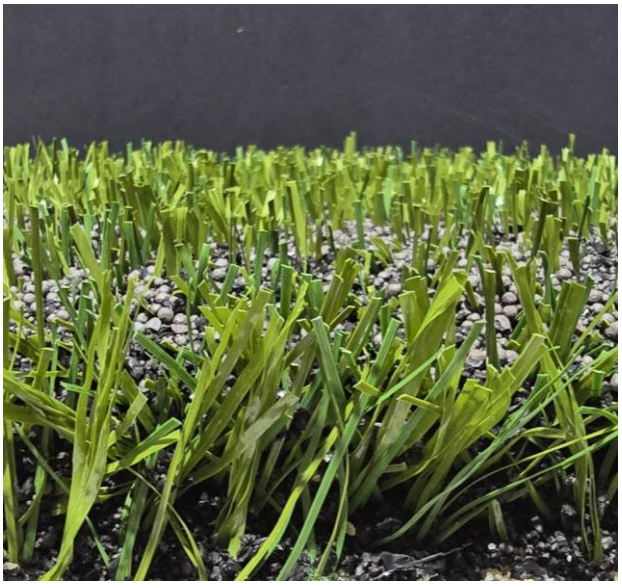
Product Details

System Details and Testing Conditions			
Project Number	96790	**Date received**	4/10/2025
Product Name	2” Blended Turf with Sand, SBR, #3 8/16 & 4L 20/40		
Turf Name	2” Blended Turf	**Underlayment**	N/A
Sample Reference No(s)	8851	**Substrate**	Concrete
Performance Infill 1	#3 8/16	**Infill Rate (lbs/ft²)**	0.50
Performance Infill 2	4L 20/40	**Infill Rate (lbs/ft²)**	0.50
Performance Infill 3	SBR	**Infill Rate (lbs/ft²)**	2.5
Stabilizing Infill	Sand	**Infill Rate (lbs/ft²)**	1.5
Free Pile Height (mm)	15	**Test Date**	9/19/2025
Ambient Humidity Range	40 – 60 %	**Operator**	JD
Ambient Temperature Range	69.8 – 77.0 °F	**Number of conditioning rolls**	50

☐ We confirm that we stored a 5” x 5” sample, which will be retained as necessary.

Surface Photos



Results Summary

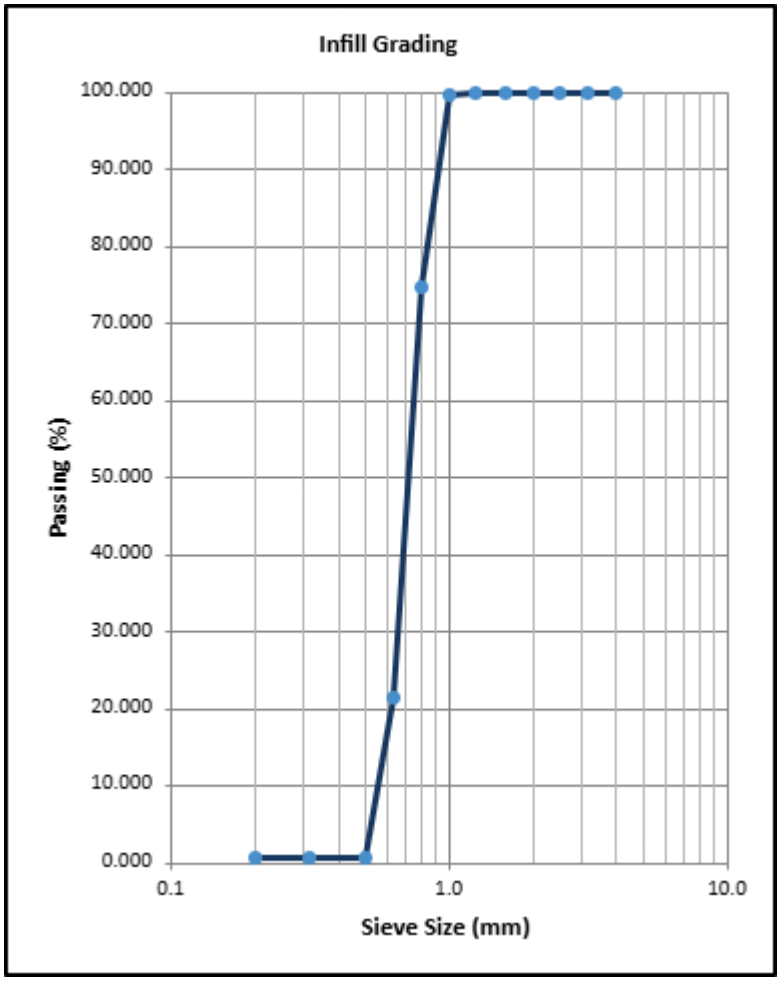
Carpet Identification		
Property	**Average**	
Total Weight (oz/yd²)	71.36	
Pile Yarn Weight(oz/yd²)	44.11	
No. of Tufts	7300	
Pile Height (inches)	2.03	
Unaged Tuft Bind (Lbf)	11.16	
Unaged Tensile Strength (Lbf)	Parallel to Manufacture	Perpendicular to Manufacture
	>200	>200
Yarn Type (Visual)	Blended Turf	

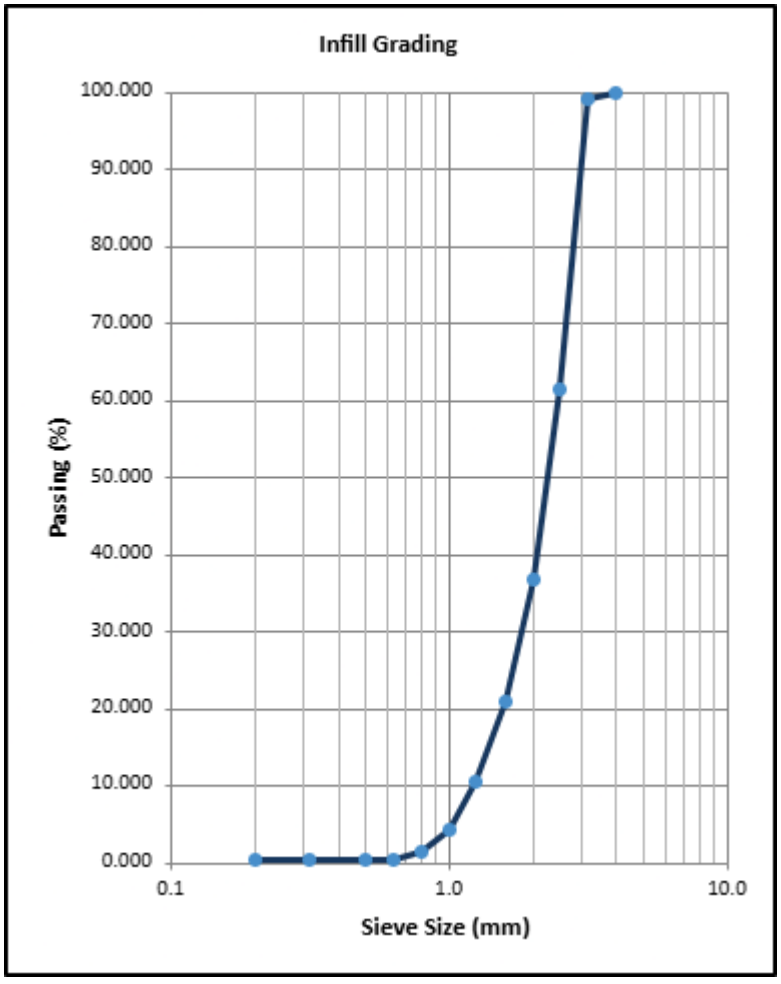
Performance Testing Results			
Property	**Test Method**	**Test Condition**	**Mean Result**
Water Permeability (In/hr)	EN 12616	FILLED	325
		UNFILLED	453
Ball Roll (m)	EN 12234 2013	INITIAL	8.64
		6015 Lisport XL Cycles	10.46

Performance Testing Results				
Property	**Test Method**	**Test Condition**	**Mean Result**	**Requirement**
Shock Absorption (%)	ASTM F3189-20	DRY	62	57 – 68 %
		WET	62	
		6015 Lisport XL Cycles	59	
Vertical Deformation (mm)	ASTM F3189-20	DRY	9.5	6 – 10 mm
		WET	8.1	
		6015 Lisport XL Cycles	7.8	
Rotational Resistance – Studded (Nm)	EN 15301–1: 2007	DRY	30	27 – 48 Nm
		WET	31	
		6015 Lisport XL Cycles	40	
Critical Fall Height – HIC (m)	ASTM F3146	DRY	0.94	≥ 1.3 m
		WET	0.91	
		6015 Lisport XL Cycles	0.81	
Gmax	ASTM F1936	DRY	128	No Requirement
		WET	125	
		6015 Lisport XL Cycles	145	
Ball Rebound (m)	EN 12235:2013	DRY	0.64	0.60 – 1.00 m
		WET	0.64	
		6015 Lisport XL Cycles	0.87	

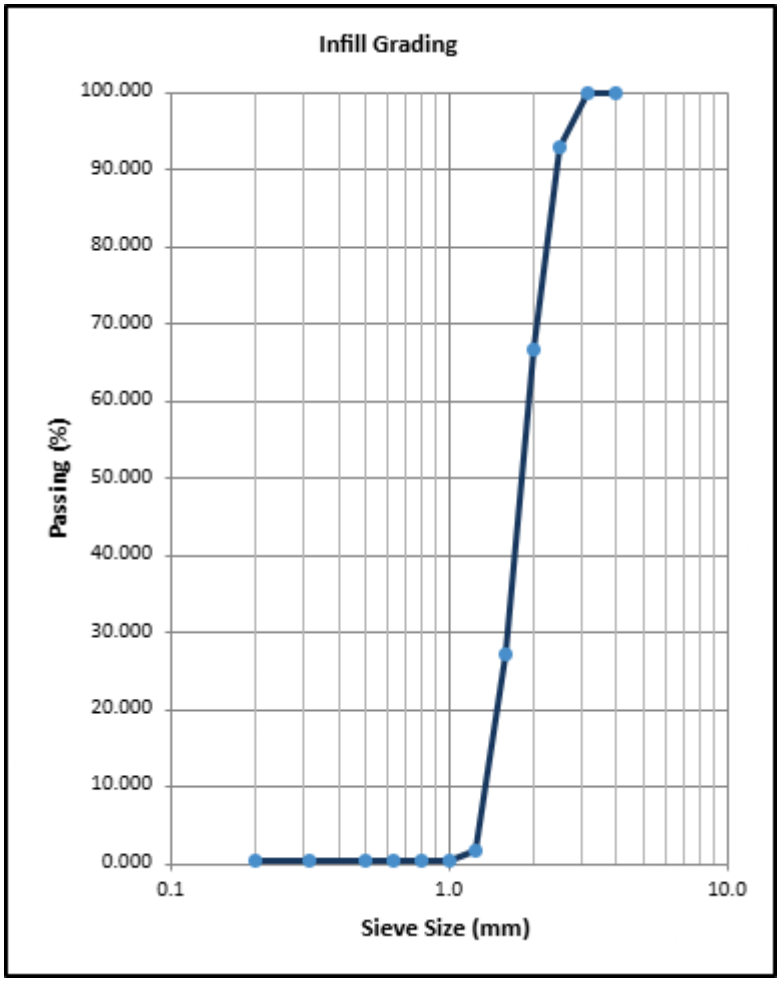
Heat Test		
Phase	**Elapsed Time (min)**	**Surface Temperature (°F)**
1	0	**77**
	5	**90**
	10	**100**
	15	**103**
	20	**109**
2	30	**113**
	40	**117**
	50	**121**
	60	**123**
3	75	**126**
	90	**128**
	105	**129**
	120	**130**
	135	**131**
	150	**132**
	165	**133**
	180	**134**

System Category: 2 (131-139 F)

Stabilizing Infill - Identification	
Stabilizing Infill	**Sand**
Particle Size Distribution	
	
Particle Size	**0.500 – 1.000**
Particle Shape	**Round**
Color	**White**

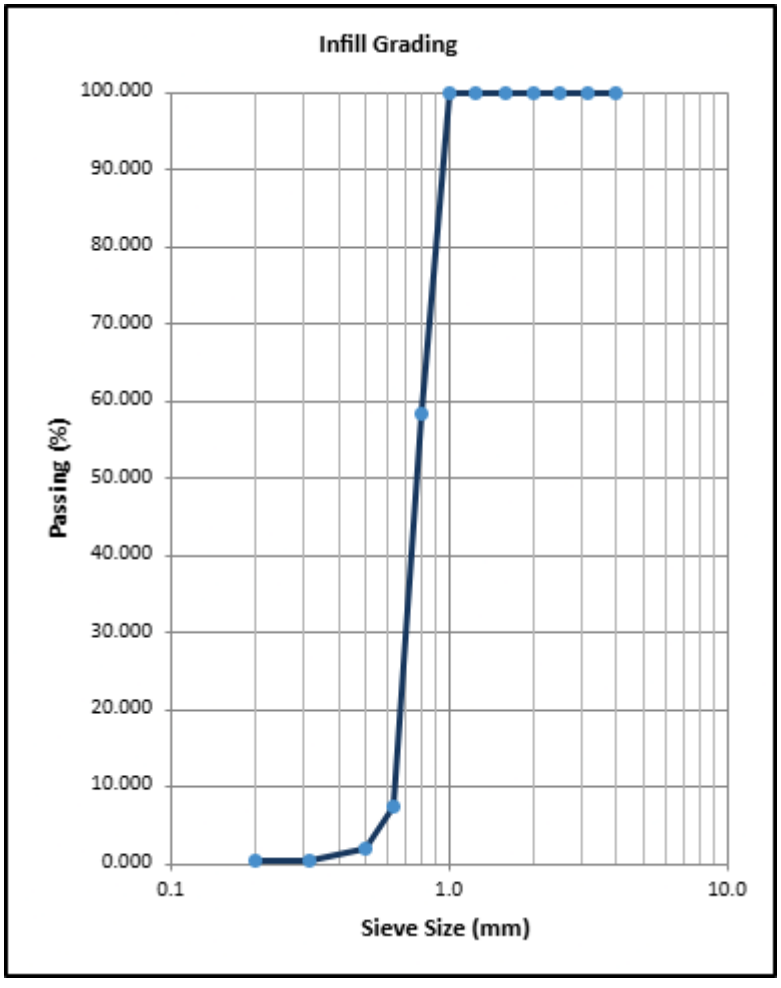
Performance Infill - Identification	
Performance Infill	**SBR**
Particle Size Distribution	
	
Particle Size	**1.000 – 3.150**
Particle Shape	**Angular**
Color	**Black**

Performance Infill - Identification	
Performance Infill	**#3 8/16**
Particle Size Distribution	



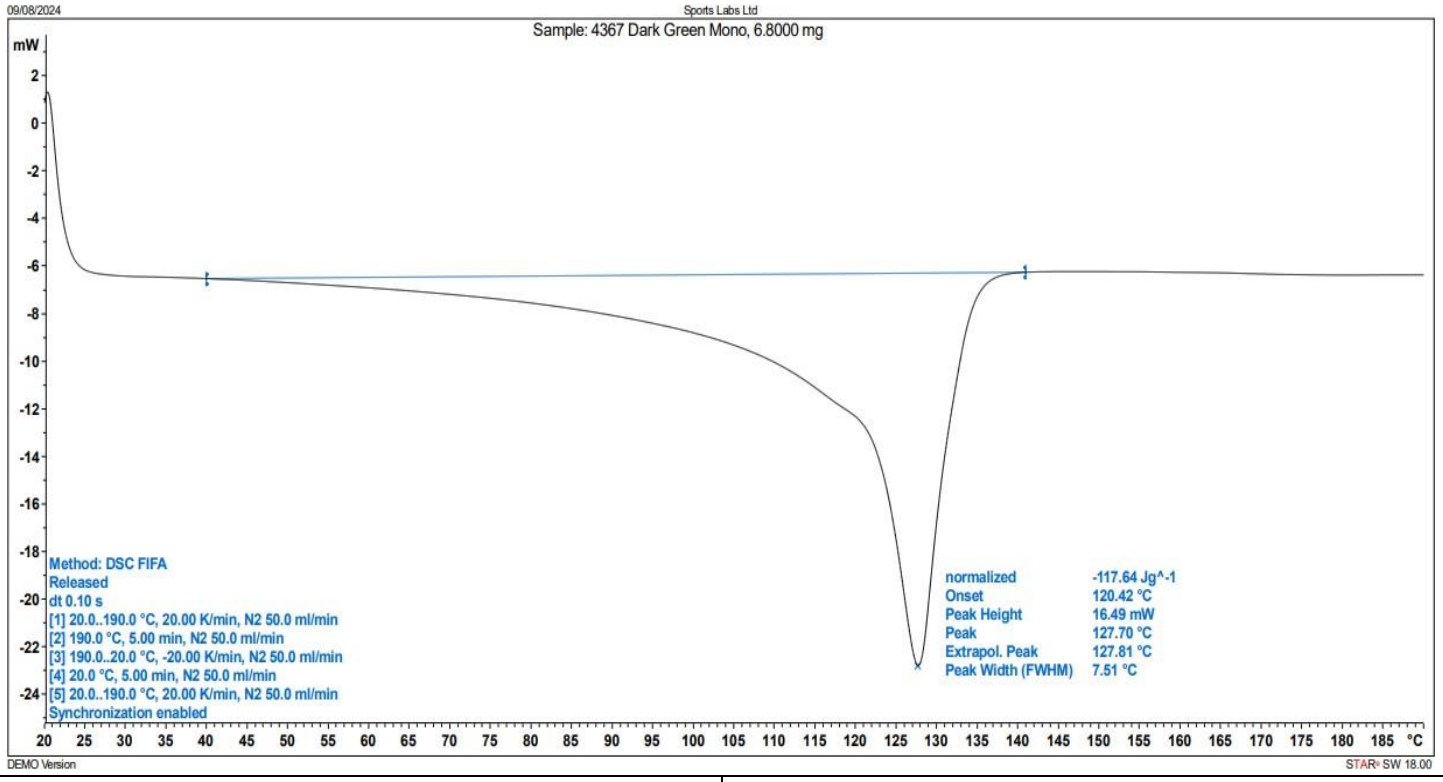
Particle Size	**1.250 – 2.500**
Particle Shape	**Round**
Color	**Grey**

Performance Infill - Identification	
Performance Infill	**4L 20/40**
Particle Size Distribution	

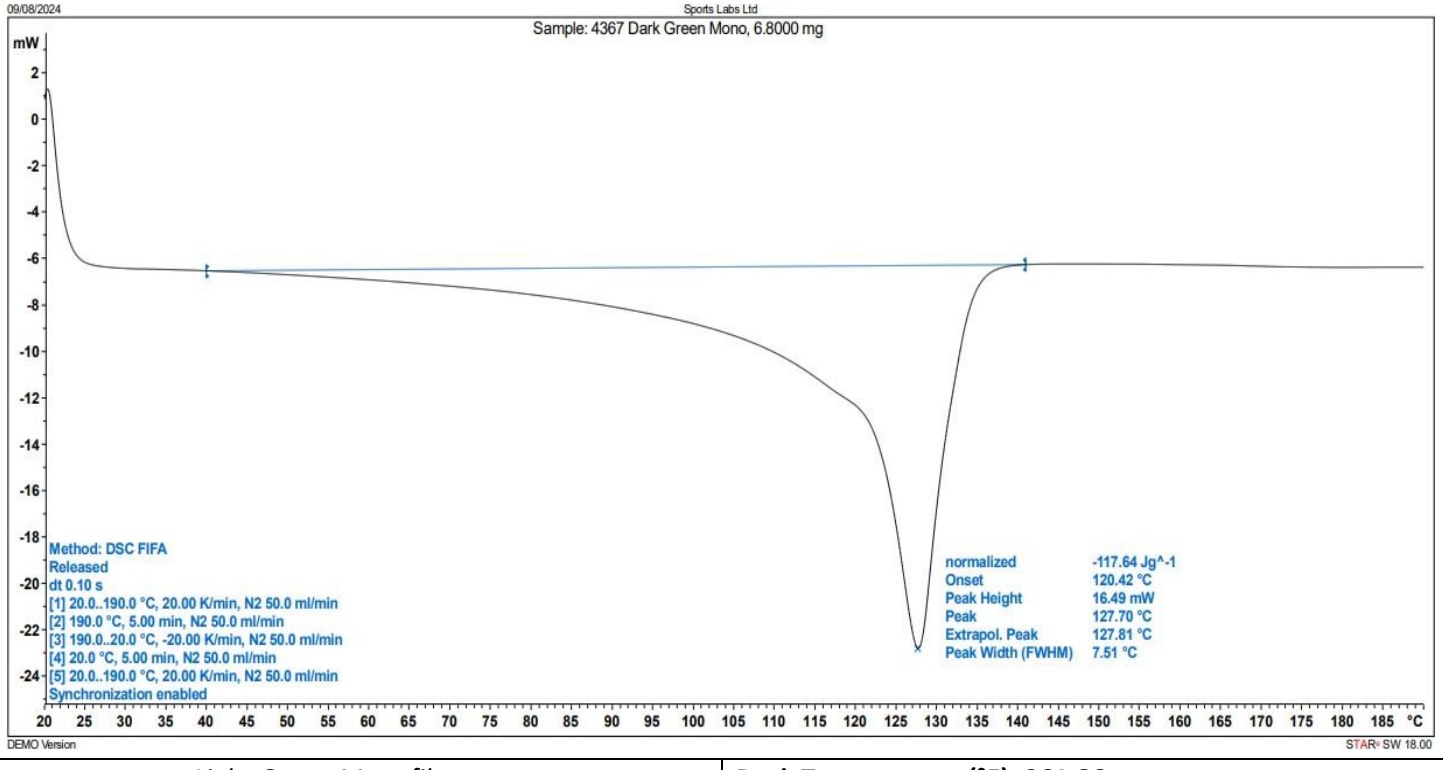


Particle Size	**0.630 – 1.000**
Particle Shape	**Round**
Color	**Grey**

Differential Scanning Calorimetry

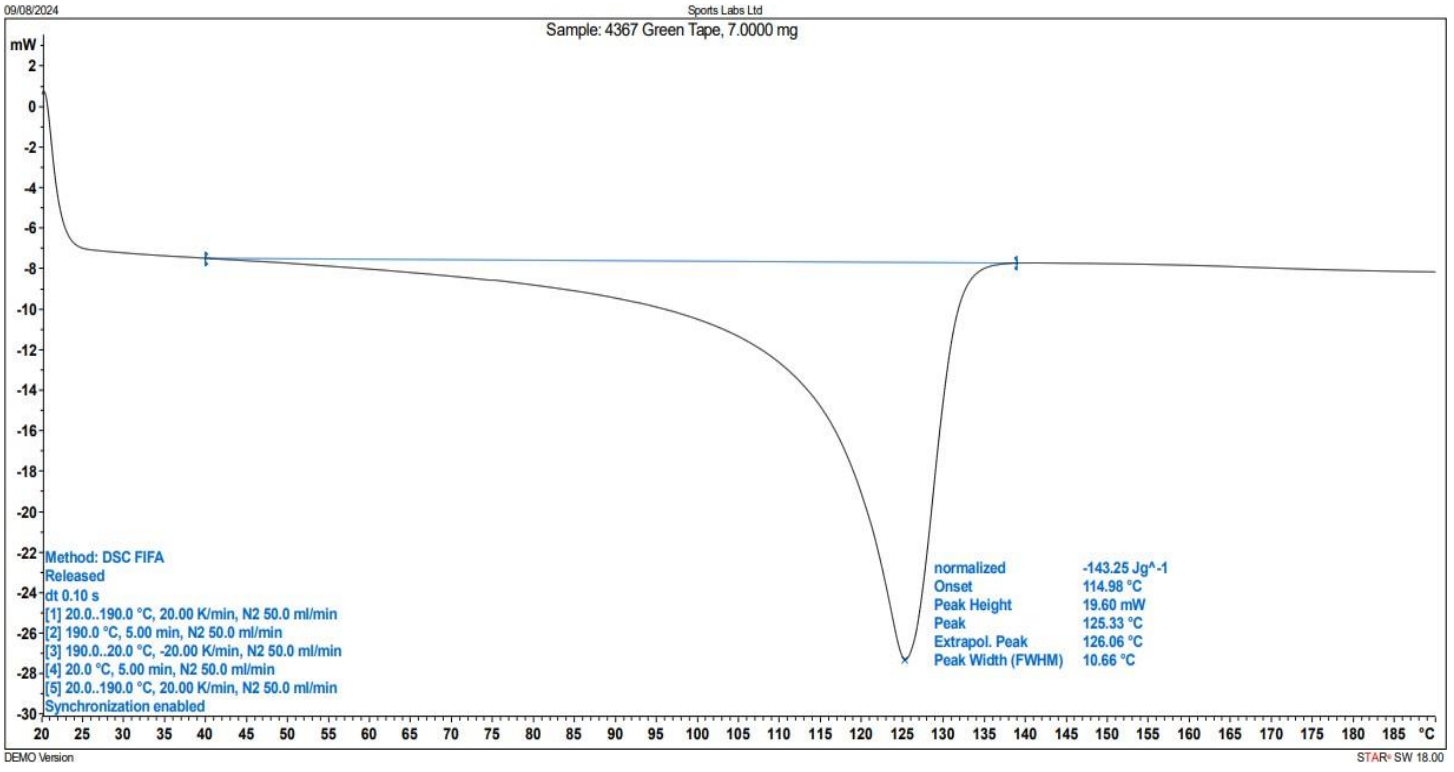


Dark Green Monofilament	**Peak Temperature (°F): 261.86**



Light Green Monofilament	**Peak Temperature (°F): 261.86**

Differential Scanning Calorimetry



Green Slitfilm	**Peak Temperature (°F): 257.59**

Sample Photos

Initial

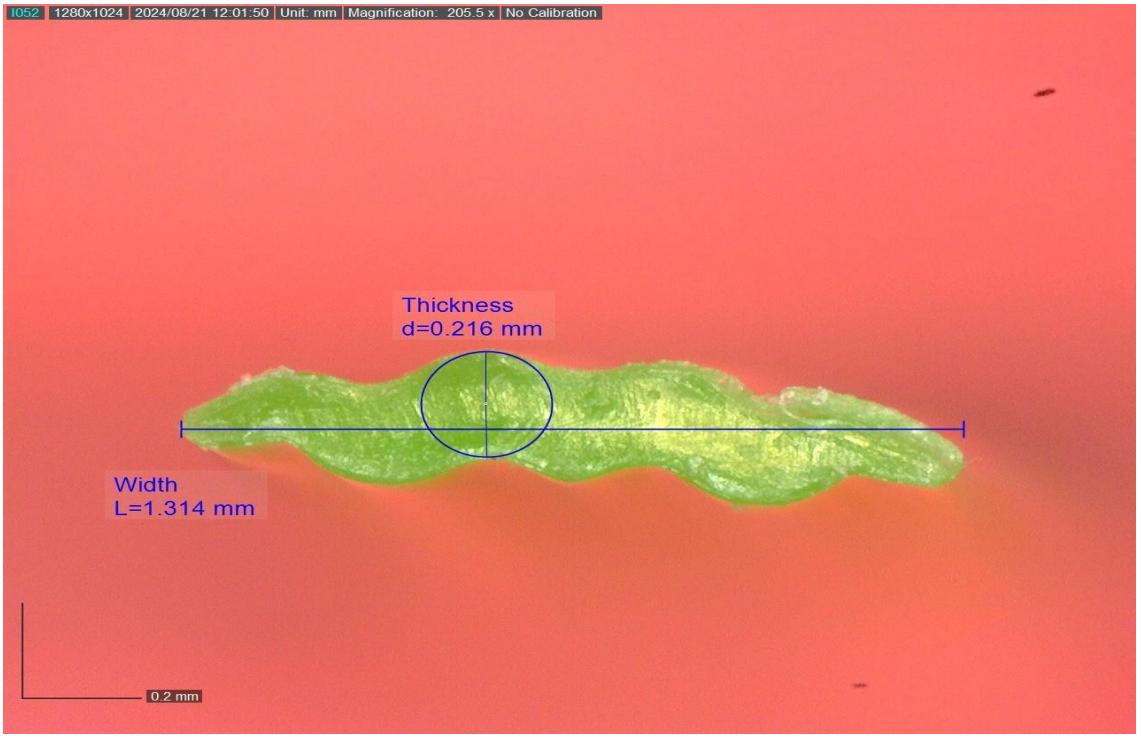
After 2000 cycles

After 4000 cycles

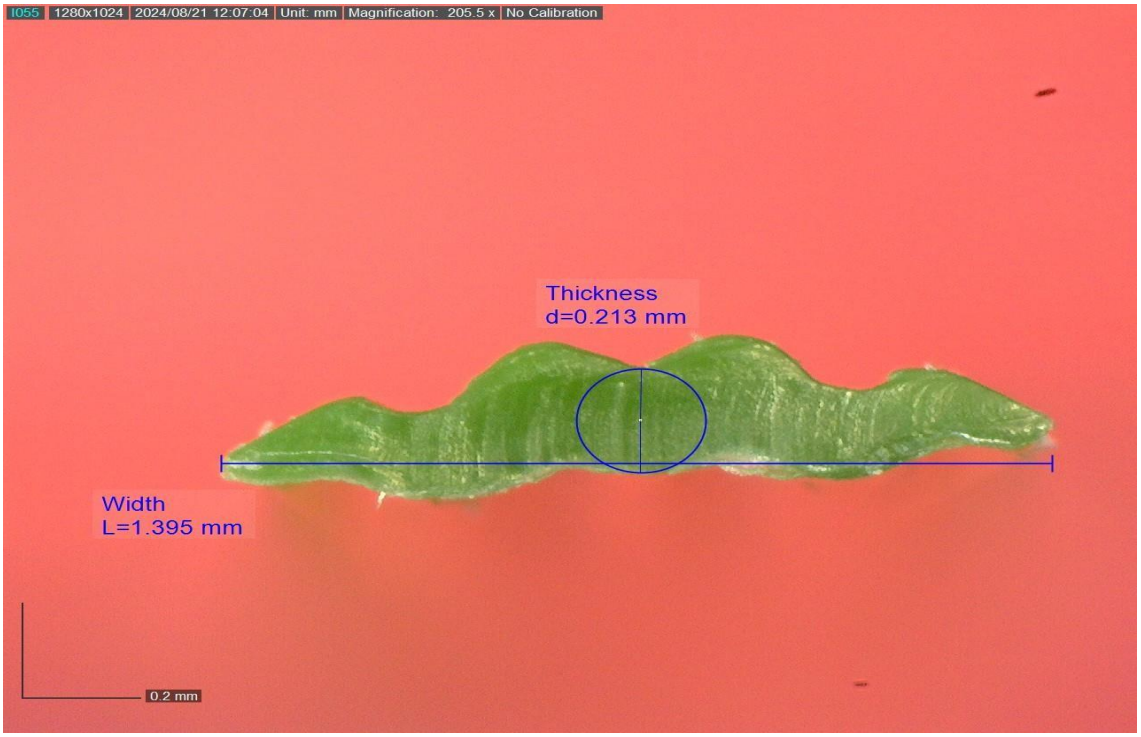
After 6000 cycles

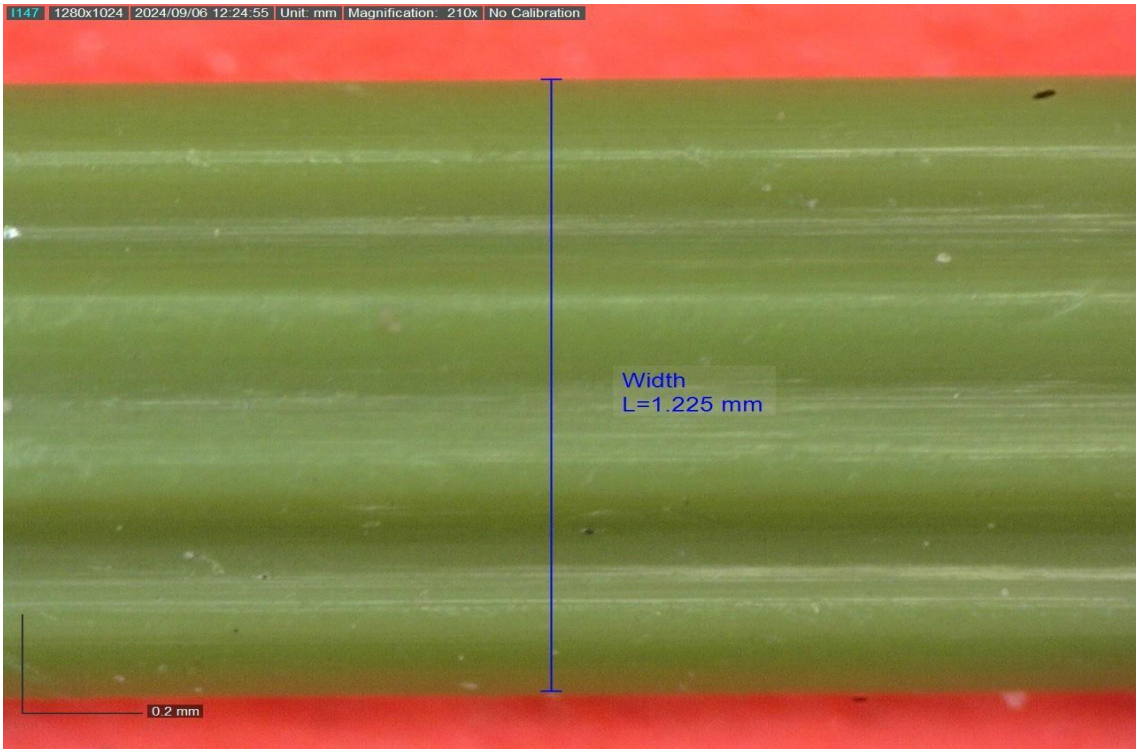
Cross Section Photos

Light Green Monofilament

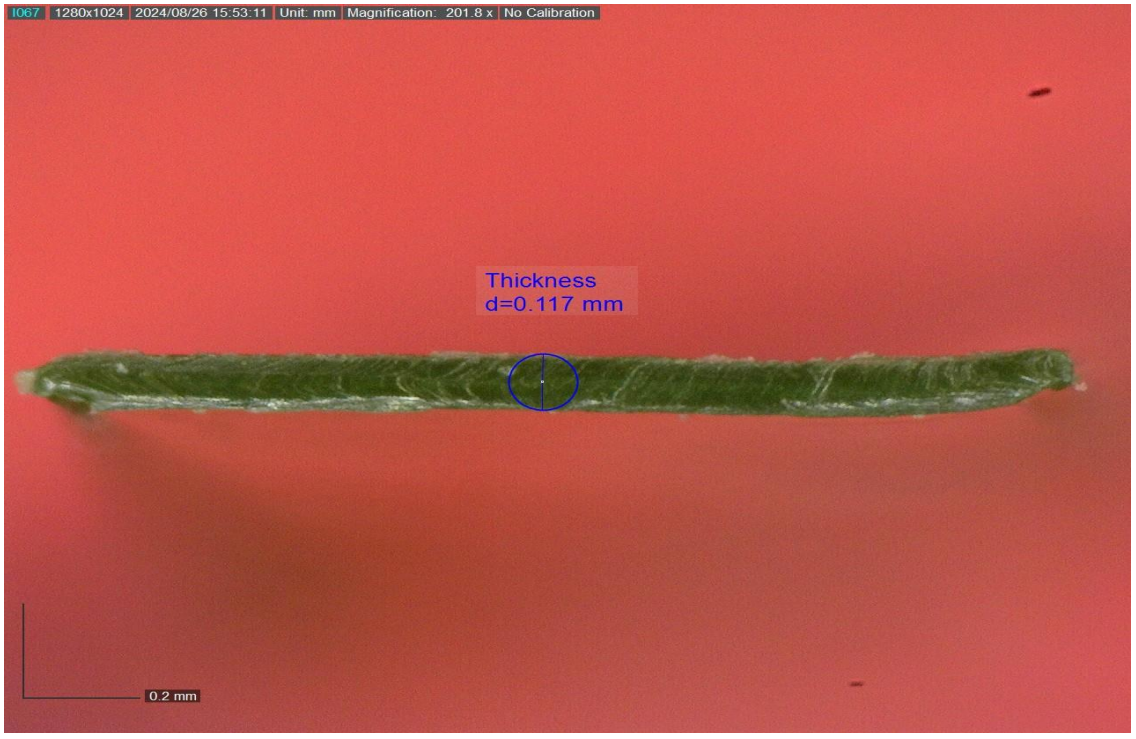


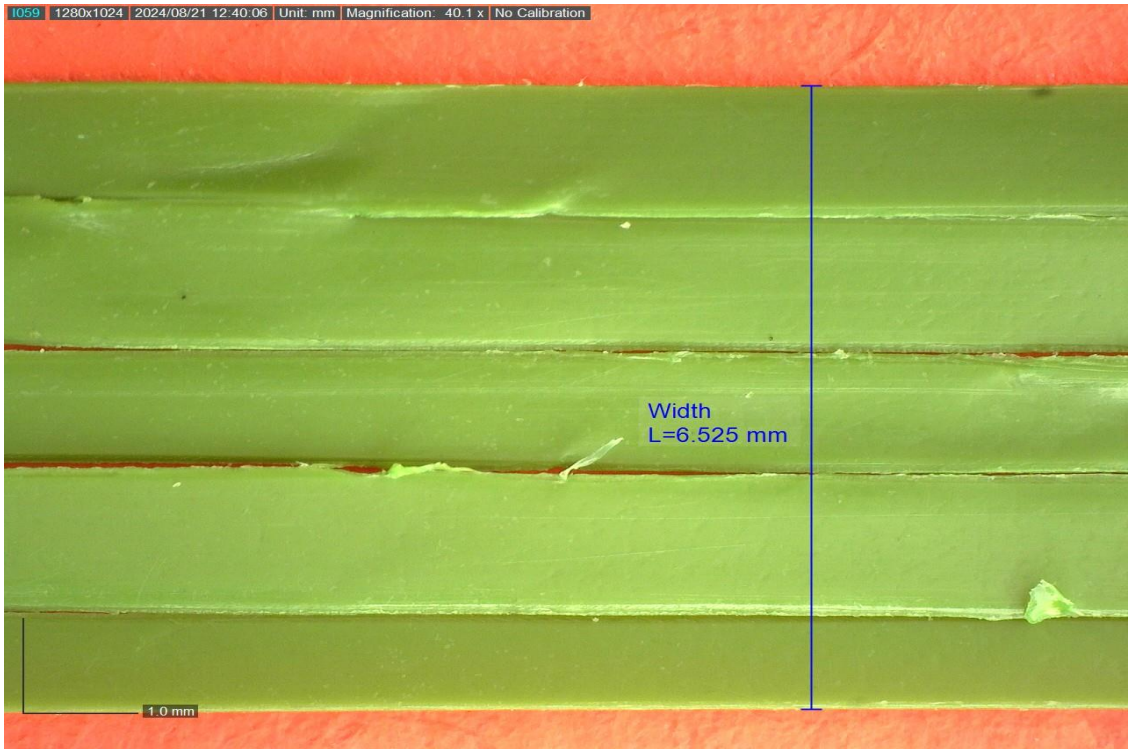
Dark Green Monofilament





Green Slitfilm





END OF REPORT

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