



FIFA LABORATORY TEST REPORT

TM Football Turf | 2015
01.01.2015

Product	REALTURF XTREME 60
FIFA Licensee	Realturf Systems S.L
Test Institute	Sports Labs Ltd.
Test Number	103293
External Test Number	11013/0618
Date of Test	09.04.2021
Test Result	Passed
Quality Level	FIFA Quality & Quality PRO
Test Type	Initial



Licensee

Main Address

Name	Realturf Systems S.L
Address	Avenida de la Antigua Peseta 131.
ZIP / City	C.P. 03114 / Alicante
Website	
Contact Email	
Contact Phone	


Test institute


Main Address

Name	Sports Labs Ltd.
Address	Sports Labs Ltd. 1 Adam Square Brucefield Industrial Park
ZIP / City	EH54 9DE / LIVINGSTON
Website	www.sportslabs.co.uk
Contact Email	info@sportslabs.co.uk
Contact Phone	+44/1506 44 755



Approval

Test Institute Director	Sean Ramsay - Associate Director
Signature	
Date	09.04.2021

Test Institute Engineer	Craig Melrose - Laboratory Manager
Signature	
Date	09.04.2021



1 – Test Results

Name	Comment	Result
1 - Summary		
Vertical ball rebound FIFA Quality		Passed
Vertical ball rebound FIFA Quality Pro		Passed
Angle ball rebound FIFA Quality		Passed
Angle ball rebound FIFA Quality Pro		Passed
Reduced ball roll FIFA Quality		Passed
Reduced ball roll FIFA Quality Pro		Passed
Shock absorption FIFA Quality		Passed
Shock absorption FIFA Quality Pro		Passed
Deformation FIFA Quality		Passed
Deformation FIFA Quality Pro		Passed
Rotational resistance FIFA Quality		Passed
Rotational resistance FIFA Quality Pro		Passed
Skin / surface friction		Passed
Skin abrasion		Passed
1 - Test Details Object		
Product Name		REALTURF XTREME 60
Product ID		-
Synthetic Turf System		Xtreme 60
Performance infill		SBR
Stabilising infill		Silica Sand
Shock-pad or elastic layer		-
Sub-base composition		Rigid Engineered Base
2 - Test Details Test Institute		
Date(s) of test		09.04.2021
Report created by		C Melrose
Laboratory Test report number		11013/0618
Test Institute Project number		11013
3 – Product Declaration (Manufacturer)		
Manufacturer		Realturf Systems S.L.
Tuft pattern		Straight
Yarn manufacturer yarn 1		Consan
Product name, code yarn 1		SJG7702000 and SJG7182000
Pile yarn profile yarn 1		Three spine
Pile thickness (µ m) yarn 1		400.0
Pile colour (RAL) value 1 yarn 1		6010
Pile colour (RAL) value 2 yarn 1		6025
Pile colour (RAL) value 3 yarn 1		
Pile width (mm) yarn 1		1.21
Number of tufts/m2 yarn 1	ISO1773	8505.00



Name	Comment	Result
Pile length (mm) yarn 1	ISO 2549	60.00
Pile weight (g/m ²) yarn 1	ISO 8543	1640.00
Pile yarn characterization yarn 1		PE
Pile yarn dtex yarn 1		14000
Yarn manufacturer yarn 2		
Product name, code yarn 2		
Pile yarn profile yarn 2		
Pile thickness (μ m) yarn 2		
Pile colour (RAL) value 1 yarn 2		
Pile colour (RAL) value 2 yarn 2		
Pile colour (RAL) value 3 yarn 2		
Pile width (mm) yarn 2		
Number of tufts/m ² yarn 2	ISO1773	
Pile length (mm) yarn 2	ISO 2549	
Pile weight (g/m ²) yarn 2	ISO 8543	
Pile yarn characterization yarn 2		
Pile yarn dtex yarn 2		
Yarn manufacturer yarn 3		
Product name, code yarn 3		
Pile yarn profile yarn 3		
Pile thickness (μ m) yarn 3		
Pile colour (RAL) value 1 yarn 3		
Pile colour (RAL) value 2 yarn 3		
Pile colour (RAL) value 3 yarn 3		
Pile width (mm) yarn 3		
Number of tufts/m ² yarn 3	ISO1773	
Pile length (mm) yarn 3	ISO 2549	
Pile weight (g/m ²) yarn 3	ISO 8543	
Pile yarn characterization yarn 3		
Pile yarn dtex yarn 3		
Primary backing Product name, code		PP cloth
Primary backing Manufacturer		JF Co. Ltd
Re-enforcement scrim Product name, code		Mesh fabric
Re-enforcement scrim Manufacturer		Sweet Fabric Co. Ltd
Secondary backing Product name, code		SBR Latex
Secondary backing Manufacturer		Trinseo
Secondary backing Dry application rate (g/m ²)		1200.0
Carpet Minimum tuft withdrawal force (N)		40
Carpet Carpet mass per unit area [g/m ²]		2985.0
Method of jointing		Bonded
Bonded joints Adhesive brand name		Mapei
Bonded joints Adhesive manufacturer		Mapei Co. Ltd



Name	Comment	Result
Bonded joints Application rate (g/m)		400 g/ lm
Bonded joints Jointing film brand name		Fule
Bonded joints Jointing film manufacturer		Fule adhesive Co. Ltd
Stitched seams Tread brand name/product code		
Stitched seams Tread manufacturer		
Stitched seams Stitch rate (stitch per lm)		
Performance Infill Product name, code		SBR
Performance Infill Manufacturer		Various
Performance Infill Material type		SBR
Performance Infill Material grading		0.8 - 2.5 mm
Performance Infill Particle shape	prEN 14955	Angular
Performance Infill Particle size range	EN 933-Part 1	0.8 - 2.5 mm
Performance Infill Bulk density (g/cm ³)	EN 1097-3	0.410
Performance Infill Application rate (kg/m ²)		16.0
Stabilising Infill Product name, code		Silica Sand
Stabilising Infill Manufacturer		Various
Stabilising Infill Material type		Sand
Stabilising Infill Material grading		0.5 - 1.0 mm
Stabilising Infill Particle shape	prEN 14955	C2
Stabilising Infill Particle size range	EN 933-Part 1	0.5 - 1.0 mm
Stabilising Infill Bulk density (g/cm ³)	EN 1097-3	1.50
Stabilising Infill Application rate (kg/m ²)		18.0
Shockpad, E-layer Product name, code		
Shockpad, E-layer Manufacturer		
Shockpad, E-layer Type		
Shockpad, E-layer Composition		
Shockpad, E-layer Bulk density (g/cm ³)		
Shockpad, E-layer Thickness	EN 1969	
Shockpad, E-layer Shock absorption (%)	FIFA 4a	
Shockpad, E-layer Deformation	FIFA 5a	
Shockpad, E-layer Tensile strength (MPa)		



Name	Comment	Result
Shockpad, E-layer Mass per unit area (kg/m ²)		
Other, detail		
3 – Test Results Player / Surface Interaction		
Rotational Resistance Initial Dry (Quality)	27 - 48 Nm	38
Rotational Resistance Initial Dry (Pro)	32 - 43 Nm	38
Rotational Resistance Initial Wet (Quality)	27 - 48 Nm	34
Rotational Resistance Initial Wet (Pro)	32 - 43 Nm	34
Rotational Resistance after simulated wear 3'000 cycles (5*)	32 - 43 Nm	38
Rotational Resistance after simulated wear 3'000 cycles (20*)	32 - 43 Nm	
Rotational Resistance after simulated wear 6'000 cycles (5*)	27 - 48 Nm	39
Rotational Resistance after simulated wear 6'000 cycles (20*)	27 - 48 Nm	
3 – Test Results Product identification field product		
Performance infill Thermographic analysis Elastomer [%] - Product Declaration		61.0
Performance infill Thermographic analysis Inorganic [%] - Product Declaration		36.0
Performance infill Thermographic analysis Organic [%] - Product Declaration		64.0
4 – Product Identification		
Artificial Turf Carpet mass per unit area [g/m ²]		2753
Artificial Turf Tufts per unit area [m ²]		8548
Artificial Turf Pile length above backing [mm]		61.0
Artificial Turf Pile weight [g/m ²]		1543
Detailed tuft decitex (Dtex) [g/10000m]		2309 x 3 + 2170 x 3
Artificial Turf Water permeability of carpet [mm/h]		2491
Artificial Turf Free pile height		15
Performance infill Particle size range [mm]		0.8 - 2.5 mm
Performance infill Particle shape		A2
Performance infill Bulk density [g/cm ³]		0.441



Name	Comment	Result
Performance infill Infill depth [mm]		32
Performance infill Thermographic analysis organic [%]		64
Performance infill Thermographic analysis inorganic [%]		36
Stabilising infill Particle size range [mm]		0.5 - 1.0 mm
Stabilising infill Particle shape		C2
Stabilising infill Bulk density [g/cm ³]		1.49
Shock pad / E-layer Shock absorption [%]	if part of supplied system	
Shock pad / E-layer Deformation	if part of supplied system	
Shock pad / E-layer Thickness	if part of supplied system	
Other, detail		
5 - Test Results Ball / Surface interaction		
Vertical Ball Rebound Initial Dry (Quality)	0.6 - 1m	0.83
Vertical Ball Rebound Initial Dry (Pro)	0.6 - 0.85m	0.83
Vertical Ball Rebound Initial Wet (Quality)	0.6 - 1m	0.80
Vertical Ball Rebound Initial Wet (Pro)	0.6 - 0.85m	0.80
Vertical Ball Rebound after simulated wear 3'000 cycles (5*)	0.6 - 0.85m	0.84
Vertical Ball Rebound after simulated wear 6'000 cycles (5*)	0.6 - 1m	0.95
Vertical Ball Rebound after simulated wear 3'000 cycles (20*)	0.6 - 0.85m	
Vertical Ball Rebound after simulated wear 6'000 cycles (20*)	0.6 - 1m	
Angle Ball Rebound Dry	45 - 80 %	51
Angle Ball Rebound Wet	45 - 80 %	67
Reduced Ball Roll Initial Dry (Quality)	4 - 10 m	5.2
Reduced Ball Roll Initial Dry (Pro)	4 - 8 m	5.2
Reduced Ball Roll after simulated wear 3'000 cycles (5*) Dry	4 - 8 m	5.8



Name	Comment	Result
Reduced Ball Roll after simulated wear 3'000 cycles (5*) Wet	4 - 8 m	5.9
Reduced Ball Roll after simulated wear 3'000 cycles (20*) Dry	4 - 8 m	
Reduced Ball Roll after simulated wear 3'000 cycles (20*) Wet	4 - 8 m	
Reduced Ball Roll after simulated wear 6'000 cycles (5*) Dry	4 - 12 m	6.4
Reduced Ball Roll after simulated wear 6'000 cycles (5*) Wet	4 - 12 m	6.5
Reduced Ball Roll after simulated wear 6'000 cycles (20*) Dry	4 - 12 m	
Reduced Ball Roll after simulated wear 6'000 cycles (20*) Wet	4 - 12 m	
Shock absorption Initial Dry (Quality)	57 - 68 %	67.5
Shock absorption Initial Dry (Pro)	62 - 68 %	67.5
Shock absorption Initial Wet (Quality)	57 - 68 %	66.8
Shock absorption Initial Wet (Pro)	62 - 68 %	66.8
Shock absorption after simulated wear 3'000 cycles (5*)	62 - 68 %	62.1
Shock absorption after simulated wear 3'000 cycles (20*)	62 - 68 %	
Shock absorption after simulated wear 6'000 cycles (5*)	57 - 68 %	59.9
Shock absorption after simulated wear 6'000 cycles (20*)	57 - 68 %	
Shock absorption 50°C	57 - 68 %	66.60
Shock absorption -5°C	57 - 68 %	64.60
Other, detail		
5 – Test Results Player / Surface interaction		
Deformation Initial Dry (Quality)	4 - 11 mm	10.0
Deformation Initial Dry (Pro)	4 - 10 mm	10.0
Deformation Initial Wet (Quality)	4 - 11 mm	10.0
Deformation Initial Wet (Pro)	4 - 10 mm	10.0
Deformation after simulated wear 3'000 cycles (5*)	4 - 10 mm	8.7
Deformation after simulated wear 3'000 cycles (20*)	4 - 10 mm	



Name	Comment	Result
Deformation after simulated wear 6'000 cycles (5*)	4 - 11 mm	8.2
Deformation after simulated wear 6'000 cycles (20*)	4 - 11 mm	
Skin / surface friction Dry	0.35 - 0.75 μ	0.72
Skin / surface friction Dry 3'000 cycles	0.35 - 0.75 μ	0.70
Skin / surface friction Dry 6'000 cycles	0.35 - 0.75 μ	0.68
Skin abrasion Dry	\pm 30 %	-23
Skin abrasion Dry 3'000 cycles	\pm 30 %	-21
Skin abrasion Dry 6'000 cycles	\pm 30 %	-20
6 – Environmental impact (artificial, light, water)		
Pile yarn 1 Colour change after artificial weathering	\geq Grey scale 3	5
Pile yarn 2 Colour change after artificial weathering	\geq Grey scale 3	4 - 5
Pile yarn 3 Colour change after artificial weathering	\geq Grey scale 3	
Pile yarn 1 Peak Breakage Force before artificial weathering		24.90
Pile yarn 1 Peak Breakage Force after artificial weathering		24.6
Pile yarn 1 Peak Breakage Force Green Reference value before artificial weathering		24.90
Pile yarn 1 Peak Breakage Force Variation after weathering from Green Reference value	Change \leq 25 %	1.20
Pile yarn 2 Peak Breakage Force before artificial weathering		24.50
Pile yarn 2 Peak Breakage Force after artificial weathering		24.7
Pile yarn 2 Peak Breakage Force Green Reference value before artificial weathering		24.90
Pile yarn 2 Peak Breakage Force Variation after weathering from Green Reference value	Change \leq 25 %	0.80
Pile yarn 3 Peak Breakage Force before artificial weathering		
Pile yarn 3 Peak Breakage Force after artificial weathering		
Pile yarn 3 Peak Breakage Force Green Reference value before artificial weathering		
Pile yarn 3 Peak Breakage Force Variation after weathering from Green Reference value	Change \leq 25 %	
Polymeric infill Colour change after artificial weathering	\geq Grey scale 3	4 - 5

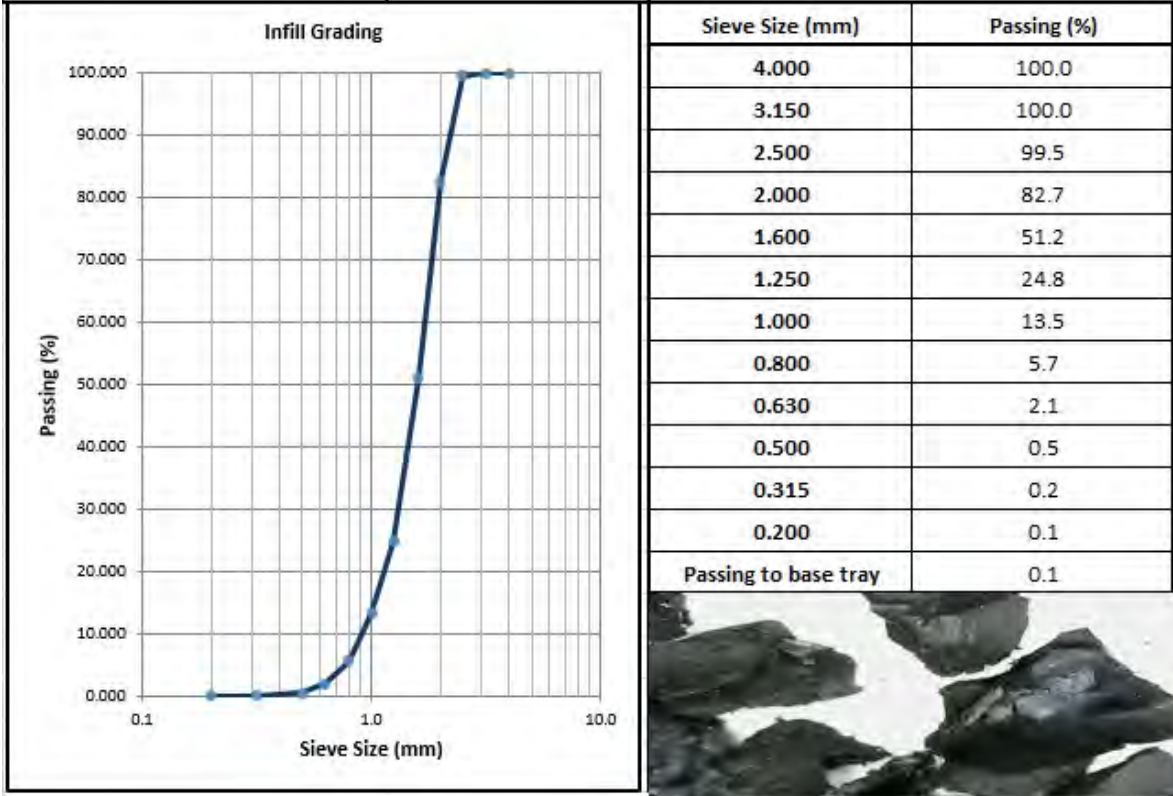


Name	Comment	Result
Polymeric infill Visual change in composition after artificial weathering	No change	No change
Complete system Water permeability	> 180 mm/h	1234
Stitched joints Strength un-aged	≥ 1000N/100mm	
Stitched joints Strength water aged	≥ 1000N/100mm	
Bonded joints Strength un-aged	≥ 75/100mm	132
Bonded joints Strength water aged	≥ 75/100mm	107
Carpet tuft Withdrawal force un-aged	≥ 40N	64
Carpet tuft Withdrawal force water aged	≥ 40N	49
Heat Category	for information	Category 3
Splash Characteristics	for information	> 1.5 %
7 - Miscellaneous (shock pad, sub-base - if part of the system)		
Shock Pad / E-layer tensile strength un-aged	≥ 0.15 MPa	
Sub-base Composition		
Sub-base Particle size range		
Sub-base Particle shape		
Sub-base Thickness		
Sub-base Compaction & test method		
Other, detail		



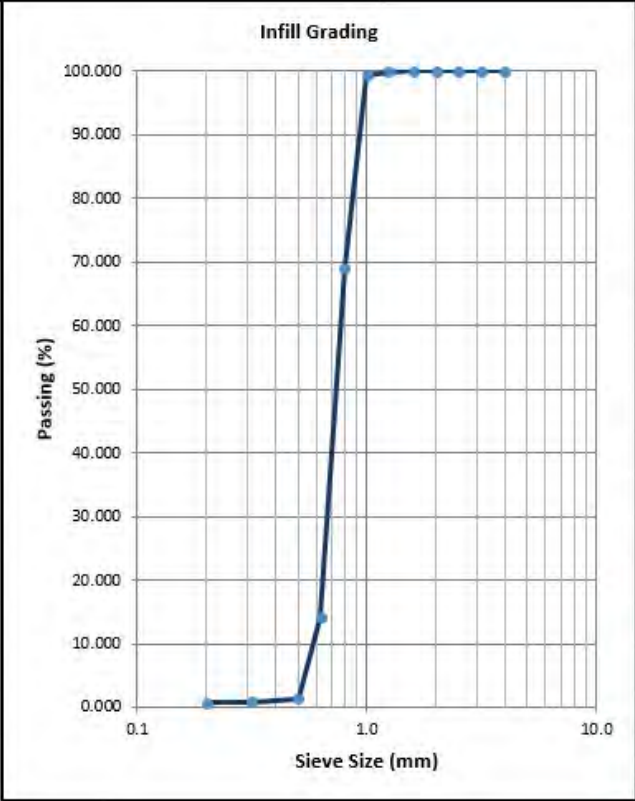
2 – Test Images

Performance infill particle grading curve





Stabilising infill particle grading curve

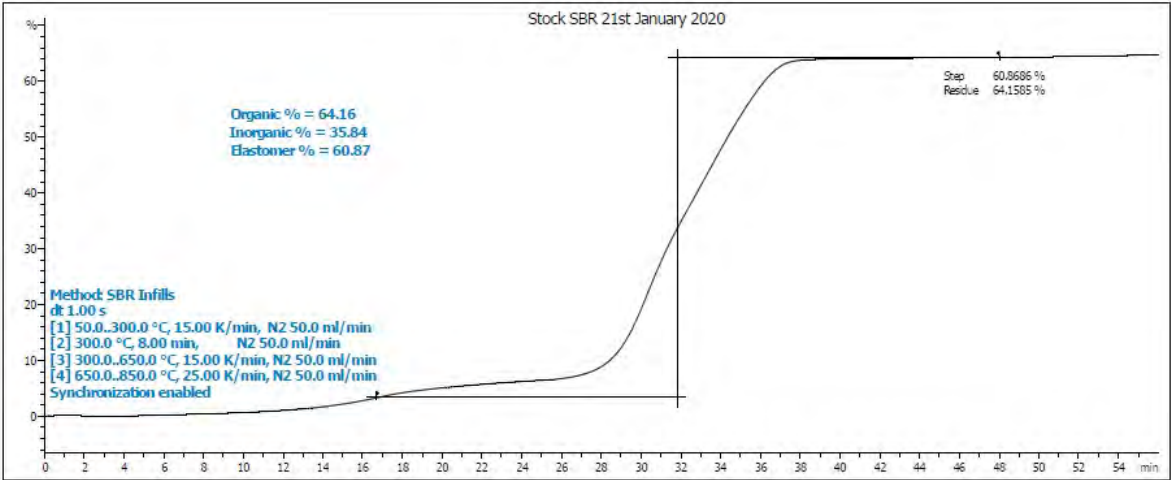


Sieve Size (mm)	Passing (%)
4.000	100.0
3.150	100.0
2.500	100.0
2.000	100.0
1.600	100.0
1.250	100.0
1.000	99.5
0.800	69.1
0.630	14.1
0.500	1.3
0.315	0.8
0.200	0.7
Passing to base tray	0.6



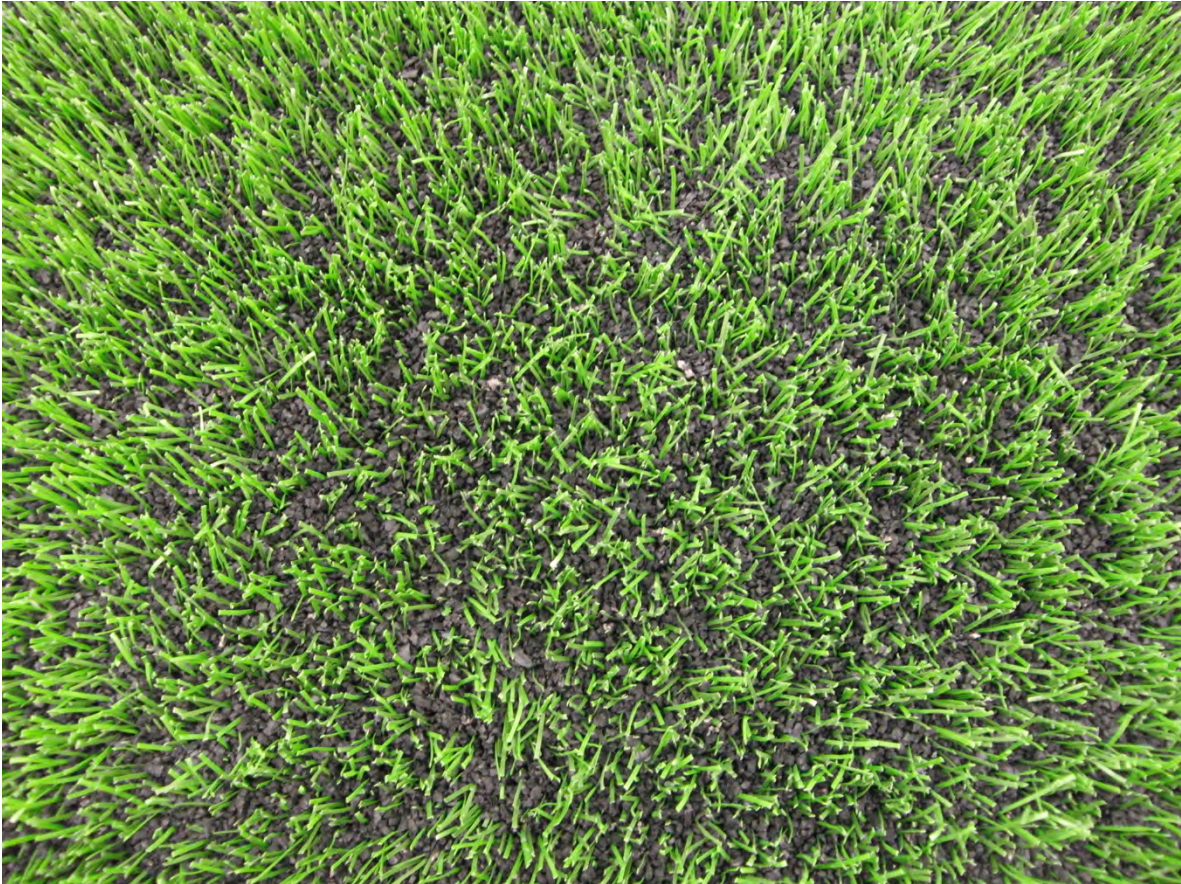


TGA of performance infill





Simulated wear - Before 1





Simulated wear - Before 2





Simulated wear - After 1



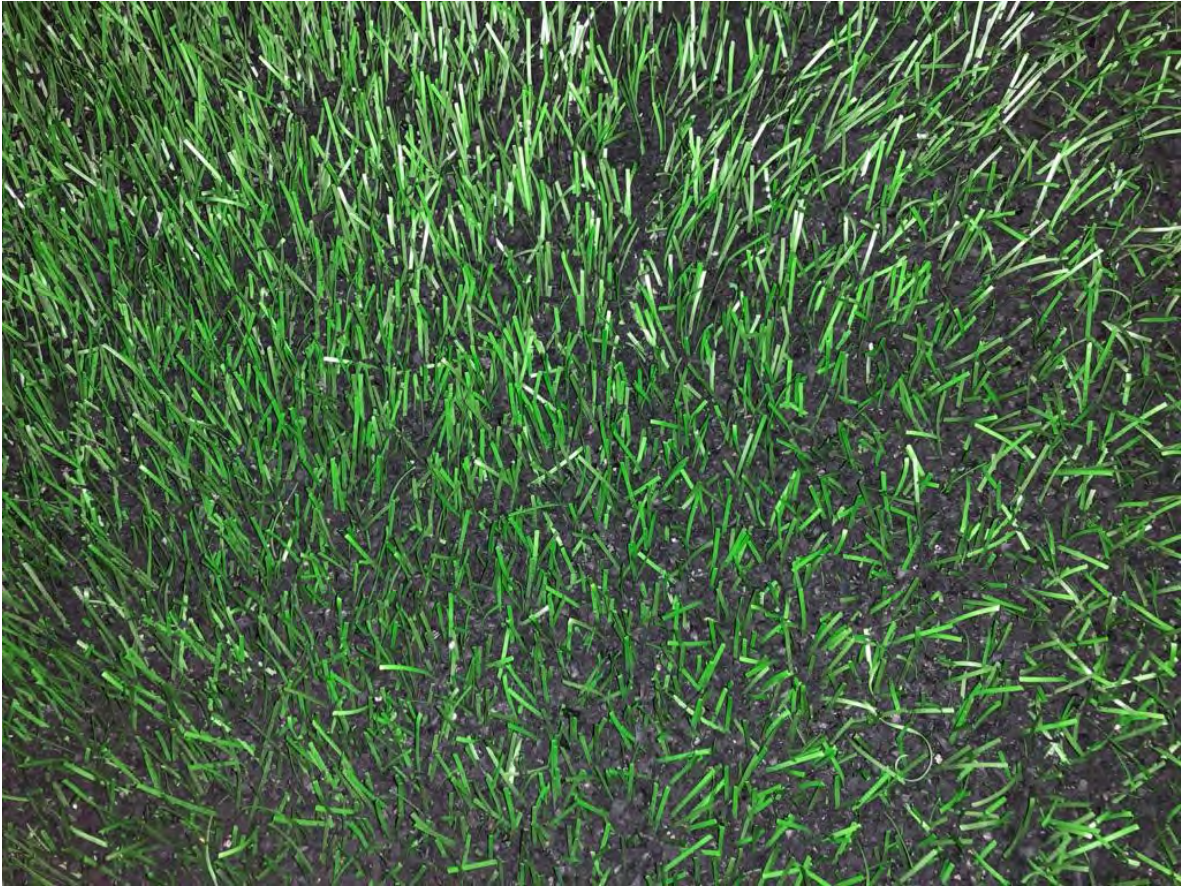


Simulated wear - After 2





Simulated wear - After 3





Simulated wear - After 4

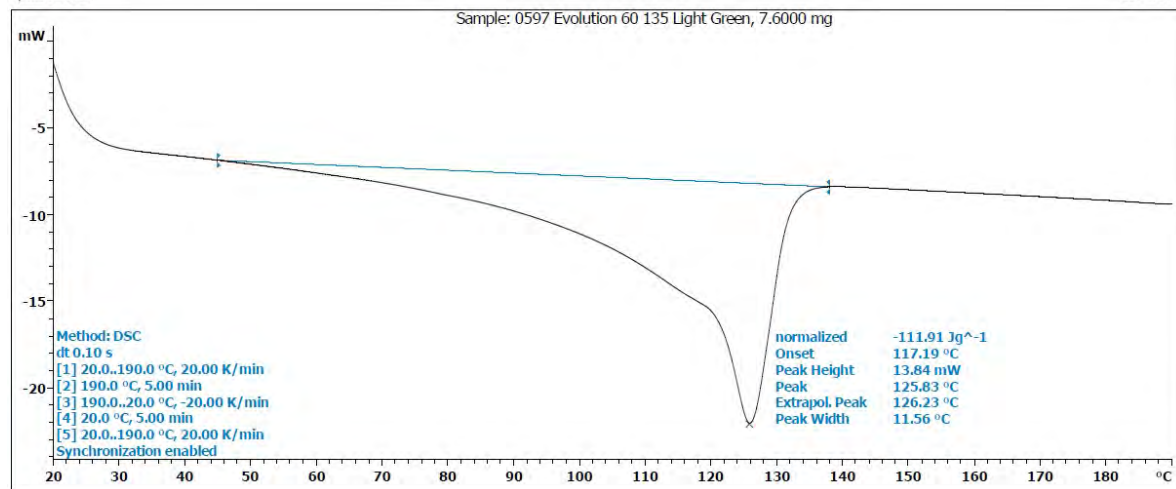




Yarn Characteristics DSC

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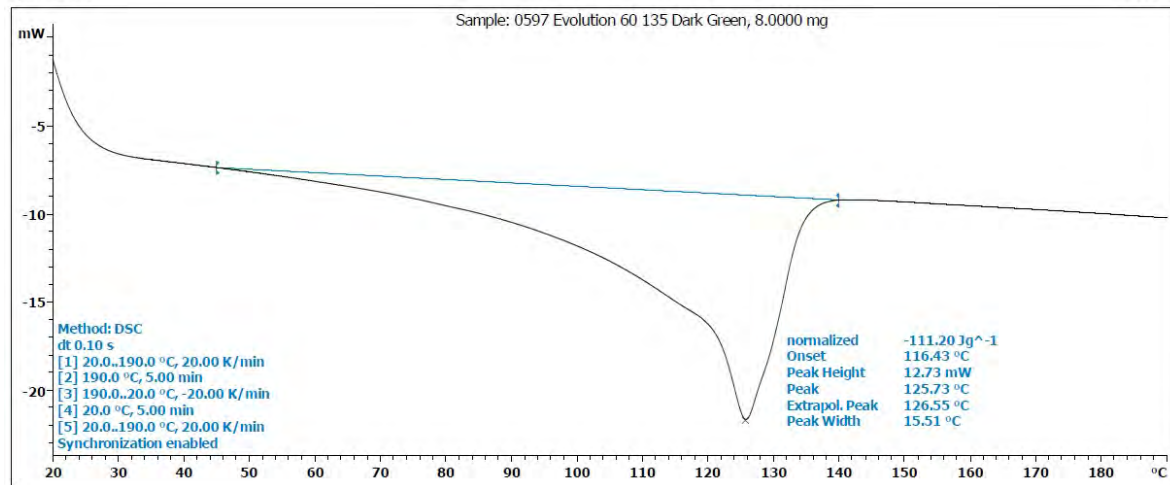




Yarn Characteristics DSC - 2

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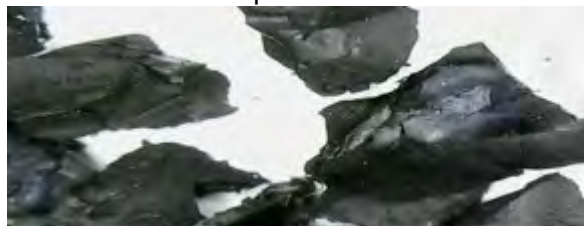


Stabilising Infill - picture



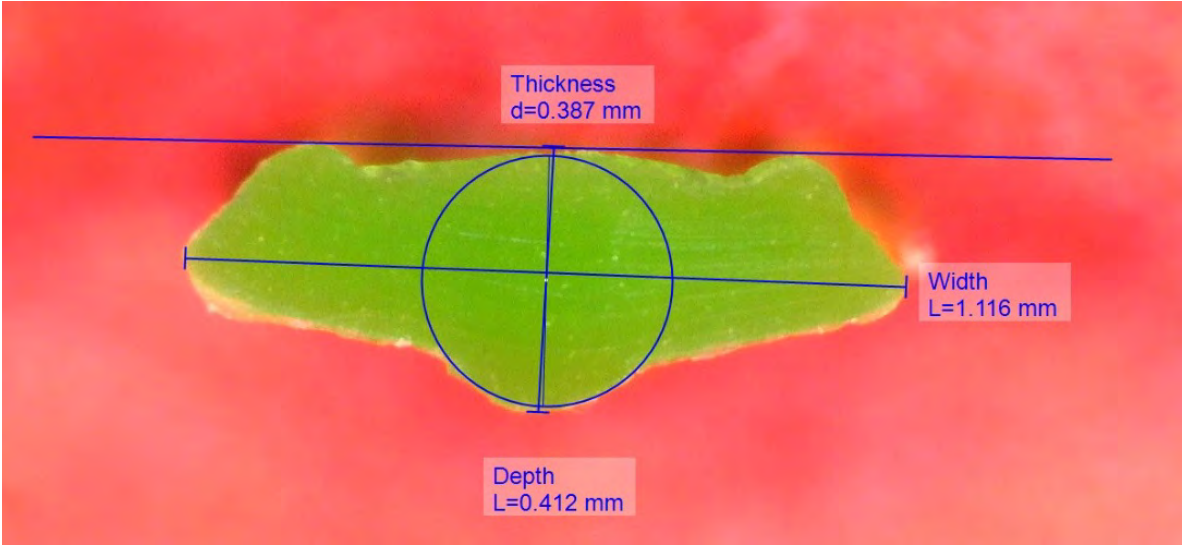


Performance Infill - picture





Cross-section Yarn 1





Cross-section Yarn 2

