



FIFA LABORATORY TEST REPORT

Test manual 2015
01.01.2015

Product	Profoot TLT Star 50-13 DD PF40
FIFA Licensee	Lano Sports N.V.
Test Institute	Sports Labs Ltd.
Test Number	102372
External Test Number	10723/9370
Date of Test	20.11.2020
Test Result	Passed
Quality Level	FIFA Quality & Quality PRO
Test Type	Initial



Licensee

Main Address

Name	Lano Sports N.V.
Address	Venetiëlaan 33
ZIP / City	8530 / HARELBEKE
Website	www.lano.com
Contact Email	
Contact Phone	+32-56/654 000


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
Signature	
Date	20.11.2020

Test Institute Engineer	Craig Melrose
Signature	
Date	20.11.2020



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		Profoot TLT Star 50-13 DD PF40
Product ID		SSTx
Synthetic Turf System		Profoot TLT Star 50-13 DD PF40
Performance infill		SBR
Stabilising infill		Filtersand 0408
Shock-pad or elastic layer		Notts Sport ShockWave 40mm
Sub-base composition		Rigid engineered base
2 - Test Details Test Institute		
Date(s) of test		21.11.2020
Report created by		Craig Melrose
Laboratory Test report number		10723/9370
Test Institute Project number		10723
3 – Product Declaration (Manufacturer)		
Manufacturer		LANO SPORTS NV
Tuft pattern		Straight



Name	Comment	Result
Yarn manufacturer yarn 1		LANO SPORTS NV
Product name, code yarn 1		TLT STAR
Pile yarn profile yarn 1		Winged diamond
Pile thickness (μ m) yarn 1		400.0
Pile colour (RAL) value 1 yarn 1		6020
Pile colour (RAL) value 2 yarn 1		
Pile colour (RAL) value 3 yarn 1		
Pile width (mm) yarn 1		1.10
Number of tufts/m ² yarn 1	ISO1773	8190.00
Pile length (mm) yarn 1	ISO 2549	50.00
Pile weight (g/m ²) yarn 1	ISO 8543	733.00
Pile yarn characterization yarn 1		PE
Pile yarn dtex yarn 1		8000
Yarn manufacturer yarn 2		LANO SPORTS NV
Product name, code yarn 2		TLT STAR
Pile yarn profile yarn 2		Double C
Pile thickness (μ m) yarn 2		400.0
Pile colour (RAL) value 1 yarn 2		6010
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	8190.00
Pile length (mm) yarn 2	ISO 2549	50.00
Pile weight (g/m ²) yarn 2	ISO 8543	687.00
Pile yarn characterization yarn 2		PE
Pile yarn dtex yarn 2		7500.0
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		



Name	Comment	Result
Pile yarn dtex yarn 3		
Primary backing Product name, code		D4H
Primary backing Manufacturer		Carpet backing
Re-enforcement scrim Product name, code		-
Re-enforcement scrim Manufacturer		-
Secondary backing Product name, code		Latex VCGBS
Secondary backing Manufacturer		LANO SPORTS
Secondary backing Dry application rate (g/m ²)		1050.0
Carpet Minimum tuft withdrawal force (N)		40
Carpet Carpet mass per unit area [g/m ²]		2850.0
Method of jointing		Bonded joints
Bonded joints Adhesive brand name		HB Fuller
Bonded joints Adhesive manufacturer		2 KR 149 PU
Bonded joints Application rate (g/m)		350
Bonded joints Jointing film brand name		HB Fuller
Bonded joints Jointing film manufacturer		ST-U
Stitched seams Tread brand name/product code		
Stitched seams Tread manufacturer		
Stitched seams Stitch rate (stitch per 1m)		
Performance Infill Product name, code		SBR
Performance Infill Manufacturer		Various
Performance Infill Material type		Recycled tyre rubber granules
Performance Infill Material grading		0.8 - 2.5 mm
Performance Infill Particle shape	prEN 14955	Irregular
Performance Infill Particle size range	EN 933-Part 1	0.8 - 2.5 mm
Performance Infill Bulk density (g/cm ³)	EN 1097-3	0.450
Performance Infill Application rate (kg/m ²)		7.0



Name	Comment	Result
Stabilising Infill Product name, code		Filtersand 0408
Stabilising Infill Manufacturer		Various
Stabilising Infill Material type		Dryed washed filtersand
Stabilising Infill Material grading		0.4 - 0.8 mm
Stabilising Infill Particle shape	prEN 14955	80% rounded
Stabilising Infill Particle size range	EN 933-Part 1	0.4 - 0.8 mm
Stabilising Infill Bulk density (g/cm ³)	EN 1097-3	1.60
Stabilising Infill Application rate (kg/m ²)		25.0
Shockpad, E-layer Product name, code		Notts Sport ShockWave 40mm
Shockpad, E-layer Manufacturer		Notts Sport
Shockpad, E-layer Type		Prefabricated Shockpad ShockWave
Shockpad, E-layer Composition		Expanded polypropymene
Shockpad, E-layer Bulk density (g/cm ³)		0.04
Shockpad, E-layer Thickness	EN 1969	40.0
Shockpad, E-layer Shock absorption (%)	FIFA 4a	75.0
Shockpad, E-layer Deformation	FIFA 5a	12.0
Shockpad, E-layer Tensile strength (MPa)		0.15
Shockpad, E-layer Mass per unit area (kg/m ²)		1.5
Other, detail		
3 - Test Results Player / Surface Interaction		
Rotational Resistance Initial Dry (Quality)	27 - 48 Nm	36
Rotational Resistance Initial Dry (Pro)	32 - 43 Nm	36
Rotational Resistance Initial Wet (Quality)	27 - 48 Nm	35
Rotational Resistance Initial Wet (Pro)	32 - 43 Nm	35
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	



Name	Comment	Result
Rotational Resistance after simulated wear 6'000 cycles (5*)	27 - 48 Nm	43
Rotational Resistance after simulated wear 6'000 cycles (20*)	27 - 48 Nm	
3 – Test Results Product identification field product		
Performance infill Thermographic analysis Organic [%] - Product Declaration		64.0
Performance infill Thermographic analysis Elastomer [%] - Product Declaration		61.0
Performance infill Thermographic analysis Inorganic [%] - Product Declaration		36.0
4 – Product Identification		
Artificial Turf Carpet mass per unit area [g/m ²]		3063
Artificial Turf Tufts per unit area [m ²]		8033
Artificial Turf Pile length above backing [mm]		50.0
Artificial Turf Pile weight [g/m ²]		1327
Detailed tuft decitex (Dtex) [g/10000m]		2568 x 3 + 2332 x 3
Artificial Turf Water permeability of carpet [mm/h]		2439
Artificial Turf Free pile height		16
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
Performance infill Infill depth [mm]		16
Performance infill Thermographic analysis organic [%]		66
Performance infill Thermographic analysis inorganic [%]		34
Stabilising infill Particle size range [mm]		0.5 - 1.0 mm
Stabilising infill Particle shape		C2



Name	Comment	Result
Stabilising infill Bulk density [g/cm ³]		1.51
Shock pad / E-layer Shock absorption [%]	if part of supplied system	74.0
Shock pad / E-layer Deformation	if part of supplied system	12.1
Shock pad / E-layer Thickness	if part of supplied system	40.0
Other, detail		
5 – Test Results Ball / Surface interaction		
Vertical Ball Rebound Initial Dry (Quality)	0.6 - 1m	0.79
Vertical Ball Rebound Initial Dry (Pro)	0.6 - 0.85m	0.79
Vertical Ball Rebound Initial Wet (Quality)	0.6 - 1m	0.72
Vertical Ball Rebound Initial Wet (Pro)	0.6 - 0.85m	0.72
Vertical Ball Rebound after simulated wear 3'000 cycles (5*)	0.6 - 0.85m	0.79
Vertical Ball Rebound after simulated wear 6'000 cycles (5*)	0.6 - 1m	0.71
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 %	66
Reduced Ball Roll Initial Dry (Quality)	4 - 10 m	4.4
Reduced Ball Roll Initial Dry (Pro)	4 - 8 m	4.4
Reduced Ball Roll after simulated wear 3'000 cycles (5*) Dry	4 - 8 m	4.6
Reduced Ball Roll after simulated wear 3'000 cycles (5*) Wet	4 - 8 m	4.8
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	



Name	Comment	Result
Reduced Ball Roll after simulated wear 6'000 cycles (5*) Dry	4 - 12 m	4.9
Reduced Ball Roll after simulated wear 6'000 cycles (5*) Wet	4 - 12 m	5.1
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 %	65.7
Shock absorption Initial Dry (Pro)	62 - 68 %	65.7
Shock absorption Initial Wet (Quality)	57 - 68 %	64.7
Shock absorption Initial Wet (Pro)	62 - 68 %	64.7
Shock absorption after simulated wear 3'000 cycles (5*)	62 - 68 %	67.3
Shock absorption after simulated wear 3'000 cycles (20*)	62 - 68 %	
Shock absorption after simulated wear 6'000 cycles (5*)	57 - 68 %	65.7
Shock absorption after simulated wear 6'000 cycles (20*)	57 - 68 %	
Shock absorption 50°C	57 - 68 %	68.00
Shock absorption -5°C	57 - 68 %	63.90
Other, detail		
5 – Test Results Player / Surface interaction		
Deformation Initial Dry (Quality)	4 - 11 mm	9.6
Deformation Initial Dry (Pro)	4 - 10 mm	9.6
Deformation Initial Wet (Quality)	4 - 11 mm	9.2
Deformation Initial Wet (Pro)	4 - 10 mm	9.2
Deformation after simulated wear 3'000 cycles (5*)	4 - 10 mm	10.0
Deformation after simulated wear 3'000 cycles (20*)	4 - 10 mm	
Deformation after simulated wear 6'000 cycles (5*)	4 - 11 mm	9.8
Deformation after simulated wear 6'000 cycles (20*)	4 - 11 mm	
Skin / surface friction Dry	0.35 - 0.75 μ	0.73



Name	Comment	Result
Skin / surface friction Dry 3'000 cycles	0.35 - 0.75 μ	0.71
Skin / surface friction Dry 6'000 cycles	0.35 - 0.75 μ	0.69
Skin abrasion Dry	\pm 30 %	-25
Skin abrasion Dry 3'000 cycles	\pm 30 %	-24
Skin abrasion Dry 6'000 cycles	\pm 30 %	-22
6 – Environmental impact (artificial, light, water)		
Pile yarn 1 Colour change after artificial weathering	\geq Grey scale 3	4-5
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		15.60
Pile yarn 1 Peak Breakage Force after artificial weathering		16.0
Pile yarn 1 Peak Breakage Force Green Reference value before artificial weathering		15.60
Pile yarn 1 Peak Breakage Force Variation after weathering from Green Reference value	Change \leq 25 %	2.60
Pile yarn 2 Peak Breakage Force before artificial weathering		21.20
Pile yarn 2 Peak Breakage Force after artificial weathering		18.4
Pile yarn 2 Peak Breakage Force Green Reference value before artificial weathering		21.20
Pile yarn 2 Peak Breakage Force Variation after weathering from Green Reference value	Change \leq 25 %	13.20
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	Change \leq 25 %	



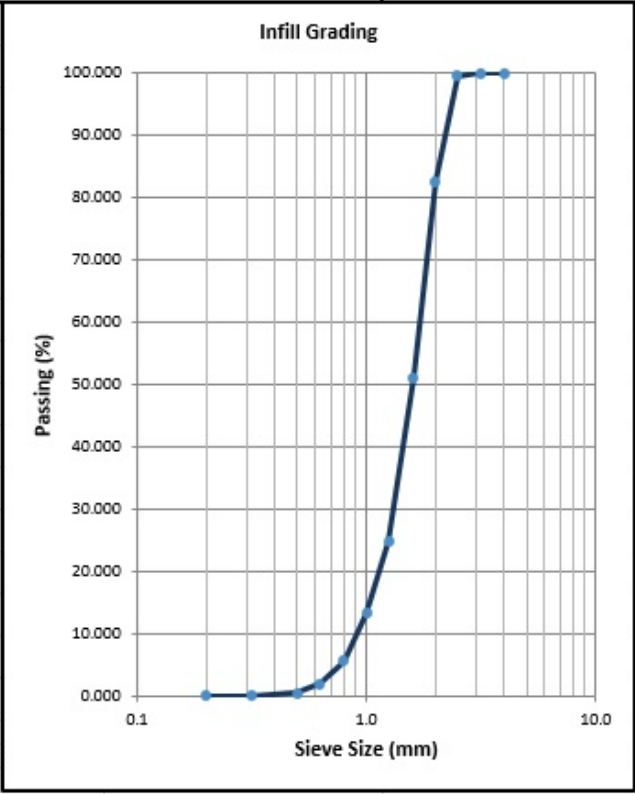
Name	Comment	Result
weathering from Green Reference value		
Polymeric infill Colour change after artificial weathering	≥ Grey scale 3	4 - 5
Polymeric infill Visual change in composition after artificial weathering	No change	No change
Complete system Water permeability	> 180 mm/h	1228
Stitched joints Strength un- aged	≥ 1000N/100mm	
Stitched joints Strength water aged	≥ 1000N/100mm	
Bonded joints Strength un- aged	≥ 75/100mm	88
Bonded joints Strength water aged	≥ 75/100mm	98
Carpet tuft Withdrawal force un-aged	≥ 40N	68
Carpet tuft Withdrawal force water aged	≥ 40N	60
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	0.19
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

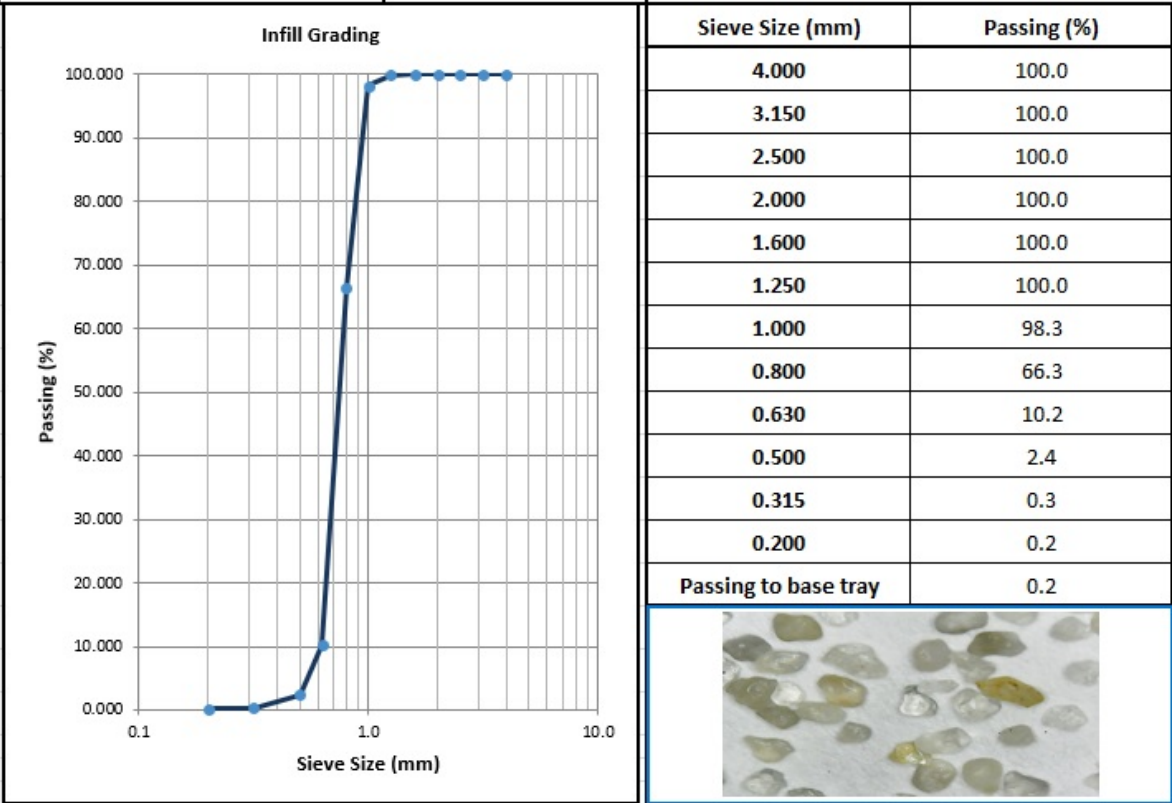


Sieve Size (mm)	Passing (%)
4.000	100.0
3.150	100.0
2.500	99.5
2.000	82.7
1.600	51.2
1.250	24.8
1.000	13.5
0.800	5.7
0.630	2.1
0.500	0.5
0.315	0.2
0.200	0.1
Passing to base tray	0.1



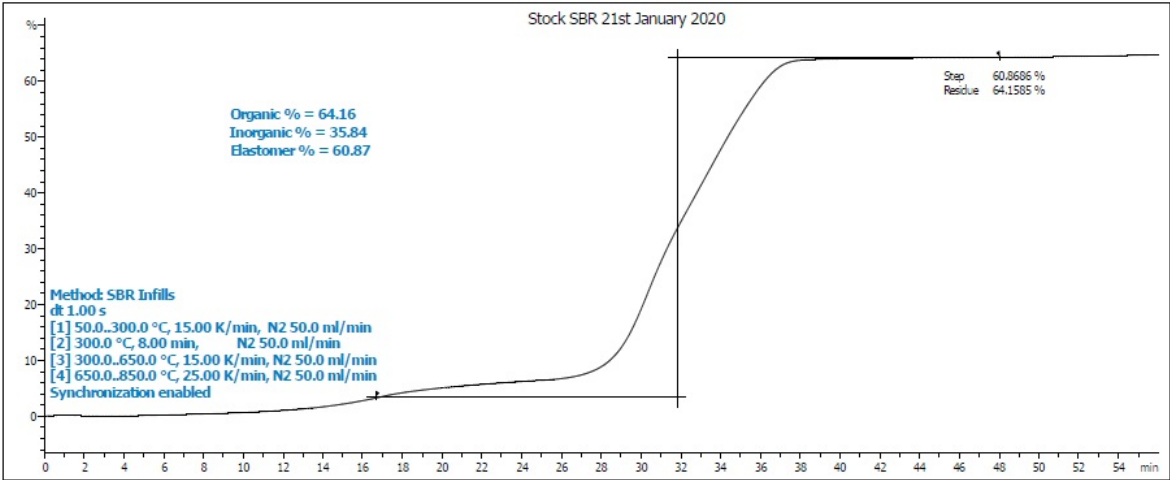


Stabilising infill particle grading curve





TGA of performance infill



Simulated wear - Before 1

Pre-Wear



Simulated wear - After 1

3000 Lisport XL Cycles



Simulated wear - After 2

6000 Lisport XL Cycles



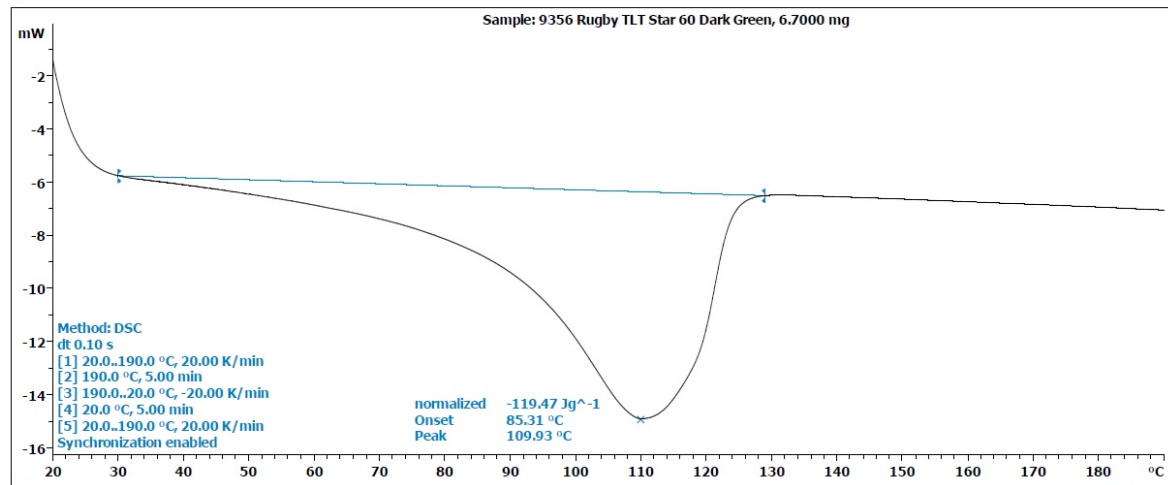


Yarn Characteristics DSC

Sports Labs Ltd

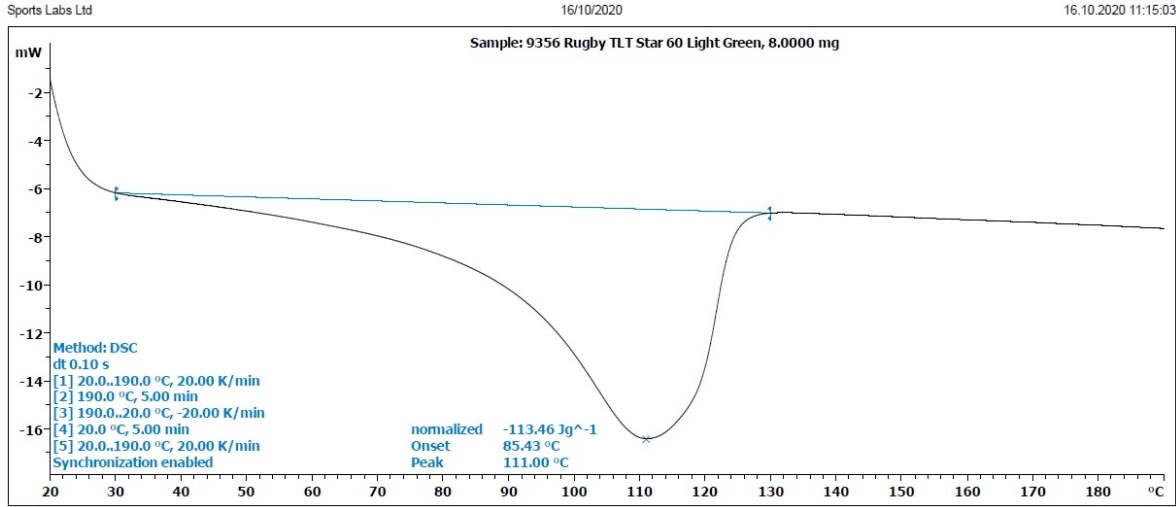
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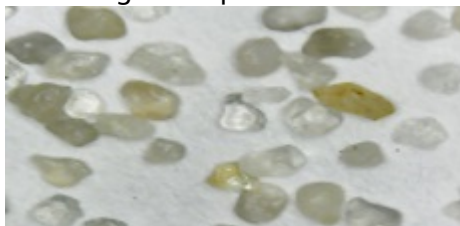


Yarn Characteristics DSC - 2



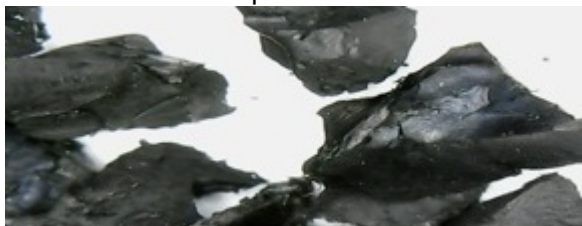


Stabilising Infill - picture

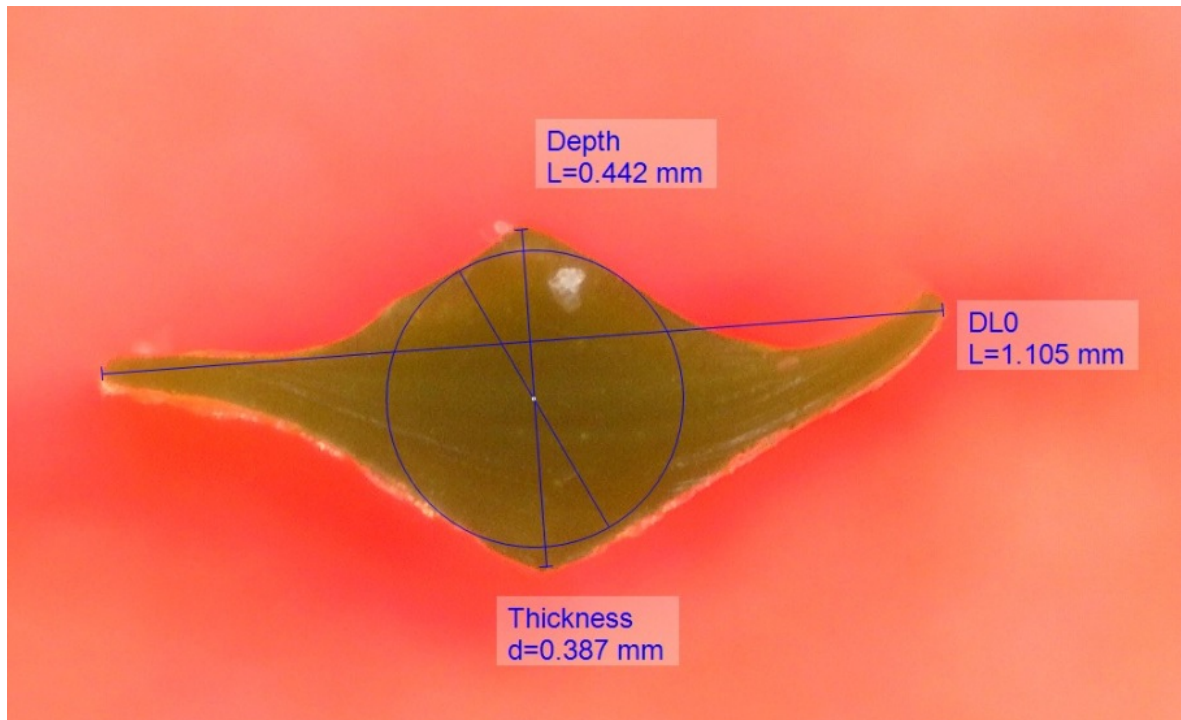




Performance Infill - picture



Cross-section Yarn 1





Cross-section Yarn 2

