FIFA LABORATORY TEST REPORT

TM Football Turf I 2015
01.01.2015

Product	Domo Varioslide S Pro 50/14/SBR/Shockwave
FIFA Licensee	SPORTS AND LEISURE GROUP NV
Test Institute	Ghent University (ERCAT)

Test Number	102328
External Test Number	20-0861-03
Date of Test	05.02.2021
Test Result	Passed
Quality Level	FIFA Quality
Test Type	Initial

Licensee

Main Address

Name	SPORTS AND LEISURE GROUP NV
Address	SPORTS AND LEISURE GROUP NV Industriepark West 43
ZIP / City	9100 / ST. NIKLAAS
Website	www.domosportsgrass.com
Contact Email	
Contact Phone	

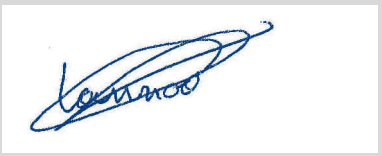
Test institute

Main Address

Name	Ghent University (ERCAT)
Address	Department of Textiles Technologiepark 70A
ZIP / City	9052 / ZWIJNAARDE
Website	
Contact Email	
Contact Phone	

Approval

Test Institute Director	Stijn Rambour
Signature	
Date	09.03.2021

Test Institute Engineer	Kristof Lannoo
Signature	
Date	09.03.2021

1 – Test Results

Name	Comment	Result
1 - Summary		
Vertical ball rebound FIFA Quality		Passed
Angle ball rebound FIFA Quality		Passed
Reduced ball roll FIFA Quality		Passed
Shock absorption FIFA Quality		Passed
Deformation FIFA Quality		Passed
Rotational resistance FIFA Quality		Passed
Skin / surface friction		Passed
Skin abrasion		Passed
1 - Test Details | Object		
Product Name		DOMO Varioslide S Pro 50/14 SBR/Shockwave
Product ID		DOMO
Synthetic Turf System		DOMO Varioslide S Pro 50/14 SBR/Shockwave
Performance infill		SBR
Stabilising infill		Silica sand
Shock-pad or elastic layer		Shockwave
Sub-base composition		rigid engineered base
2 - Test Details | Test Institute		
Date(s) of test		05.02.2021
Report created by		Kristof Lannoo
Laboratory Test report number		20-0861-03
Test Institute Project number		20-0861-03
3 – Product Declaration (Manufacturer)		
Manufacturer		Sports & Leisure Group NV
Tuft pattern		Straight
Yarn manufacturer | yarn 1		DOMO
Product name, code | yarn 1		S Pro Spiral
Pile yarn profile | yarn 1		Flat with spine
Pile thickness (µ m) | yarn 1		300.0
Pile colour (RAL) | value 1 | yarn 1		120 40 30
Pile colour (RAL) | value 2 | yarn 1		
Pile colour (RAL) | value 3 | yarn 1		
Pile width (mm) | yarn 1		1.30

Name	Comment	Result
Number of tufts/m2 | yarn 1	ISO1773	8820.00
Pile length (mm) | yarn 1	ISO 2549	50.00
Pile weight (g/m2) | yarn 1	ISO 8543	543.00
Pile yarn characterization | yarn 1		PE
Pile yarn dtex | yarn 1		5500
Yarn manufacturer | yarn 2		DOMO
Product name, code | yarn 2		S Pro Spiral
Pile yarn profile | yarn 2		Flat with spine
Pile thickness (µ m) | yarn 2		300.0
Pile colour (RAL) | value 1 | yarn 2		110 40 30
Pile colour (RAL) | value 2 | yarn 2		
Pile colour (RAL) | value 3 | yarn 2		
Pile width (mm) | yarn 2		1.30
Number of tufts/m2 | yarn 2	ISO1773	8820.00
Pile length (mm) | yarn 2	ISO 2549	50.00
Pile weight (g/m2) | yarn 2	ISO 8543	543.00
Pile yarn characterization | yarn 2		PE
Pile yarn dtex | yarn 2		5500.0
Yarn manufacturer | yarn 3		DOMO
Product name, code | yarn 3		S Pro Flat
Pile yarn profile | yarn 3		Flat
Pile thickness (µ m) | yarn 3		110.0
Pile colour (RAL) | value 1 | yarn 3		6025
Pile colour (RAL) | value 2 | yarn 3		
Pile colour (RAL) | value 3 | yarn 3		
Pile width (mm) | yarn 3		6.00
Number of tufts/m2 | yarn 3	ISO1773	8820.00
Pile length (mm) | yarn 3	ISO 2549	50.00
Pile weight (g/m2) | yarn 3	ISO 8543	544.00
Pile yarn characterization | yarn 3		PE
Pile yarn dtex | yarn 3		5500.0
Primary backing | Product name, code		D1
Primary backing | Manufacturer		Carpet Backing
Re-enforcement scrim | Product name, code		
Re-enforcement scrim | Manufacturer		
Secondary backing | Product name, code		5/75
Secondary backing | Manufacturer		EOC (Eurocompound)

Name	Comment	Result
Secondary backing | Dry application rate (g/m2)		1000.0
Carpet | Minimum tuft withdrawal force (N)		40
Carpet | Carpet mass per unit area [g/m2]		2882.0
Method of jointing		Bonding joints
Bonded joints | Adhesive brand name		AW Glue
Bonded joints | Adhesive manufacturer		DOMO
Bonded joints | Application rate (g/m)		300
Bonded joints | Jointing film brand name		LB145
Bonded joints | Jointing film manufacturer		DOMO
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		DOMO
Performance Infill | Material type		SBR Recycled
Performance Infill | Material grading		1-2.5mm
Performance Infill | Particle shape	prEN 14955	Irregular
Performance Infill | Particle size range	EN 933-Part 1	1-2.5mm
Performance Infill | Bulk density (g/cm3)	EN 1097-3	0.450
Performance Infill | Application rate (kg/m2)		6.0
Stabilising Infill | Product name, code		DOMO sand 0408
Stabilising Infill | Manufacturer		DOMO
Stabilising Infill | Material type		Silica sand
Stabilising Infill | Material grading		0.4-0.8mm
Stabilising Infill | Particle shape	prEN 14955	>80% roundness
Stabilising Infill | Particle size range	EN 933-Part 1	0.4-0.8mm
Stabilising Infill | Bulk density (g/cm3)	EN 1097-3	1.58

Name	Comment	Result
Stabilising Infill | Application rate (kg/m2)		35.0
Shockpad, E-layer | Product name, code		ShockWave
Shockpad, E-layer | Manufacturer		Notts Sports
Shockpad, E-layer | Type		Prefabricated
Shockpad, E-layer | Composition		Steam Blown EPP beads, injection moulded
Shockpad, E-layer | Bulk density (g/cm3)		0.05
Shockpad, E-layer| Thickness	EN 1969	40.0
Shockpad, E-layer | Shock absorption (%)	FIFA 4a	70.0
Shockpad, E-layer | Deformation	FIFA 5a	10.0
Shockpad, E-layer | Tensile strength (MPa)		0.15
Shockpad, E-layer | Mass per unit area (kg/m2)		1.7
Other, detail		
3 – Test Results | Player / Surface Interaction		
Rotational Resistance | Initial | Dry (Quality)	27 - 48 Nm	37
Rotational Resistance | Initial | Wet (Quality)	27 - 48 Nm	37
Rotational Resistance | after simulated wear | 6'000 cycles (5*)	27 - 48 Nm	46
Rotational Resistance | after simulated wear | 6'000 cycles (20*)	27 - 48 Nm	
3 – Test Results | Product identification field product		
Performance infill | Theremographic analysis | Elastomer [%] - Product Declaration		55.0
Performance infill | Theremographic analysis | Inorganic [%] - Product Declaration		35.0
Performance infill | Theremographic analysis | Organic [%] - Product Declaration		65.0
4 – Product Identification		
Artificial Turf | Carpet mass per unit area [g/m2]		2935
Artificial Turf | Tufts per unit area [m2]		9130

Name	Comment	Result
Artificial Turf | Pile lenght above backing [mm]		52.0
Artificial Turf | Pile weight [g/m2]		1735
Detailed tuft decitex (Dtex) [g/10000m]		3x1914 + 3x1864 +1x5623
Artificial Turf | Water permeability of carpet [mm/h]		>2000
Artificial Turf | Free pile height		13
Performance infill | Particle size range [mm]		0.8-2.5mm
Performance infill | Particle shape		A2
Performance infill | Bulk density [g/cm3]		0.450
Performance infill | Infill depth [mm]		38
Performance infill | Thermographic analysis | organic [%]		65
Performance infill | Theremographic analysis | inorganic [%]		35
Stabilising infill | Particle size range [mm]		0.315-0.8
Stabilising infill | Particle shape		C2
Stabilising infill | Bulk density [g/cm3]		1.51
Shock pad / E-layer | Shock absorption [%]	if part of supplied system	75.0
Shock pad / E-layer | Deformation	if part of supplied system	11.5
Shock pad / E-layer | Thickness	if part of supplied system	39.8
Other, detail		
5 – Test Results | Ball / Surface interaction		
Vertical Ball Rebound | Initial | Dry (Quality)	0.6 - 1m	0.74
Vertical Ball Rebound | Initial | Wet (Quality)	0.6 - 1m	0.75
Vertical Ball Rebound | after simulated wear | 6'000 cycles (5*)	0.6 - 1m	0.89
Vertical Ball Rebound | after simulated wear | 6'000 cycles (20*)	0.6 - 1m	
Angle Ball Rebound | Dry	45 - 70 %	53

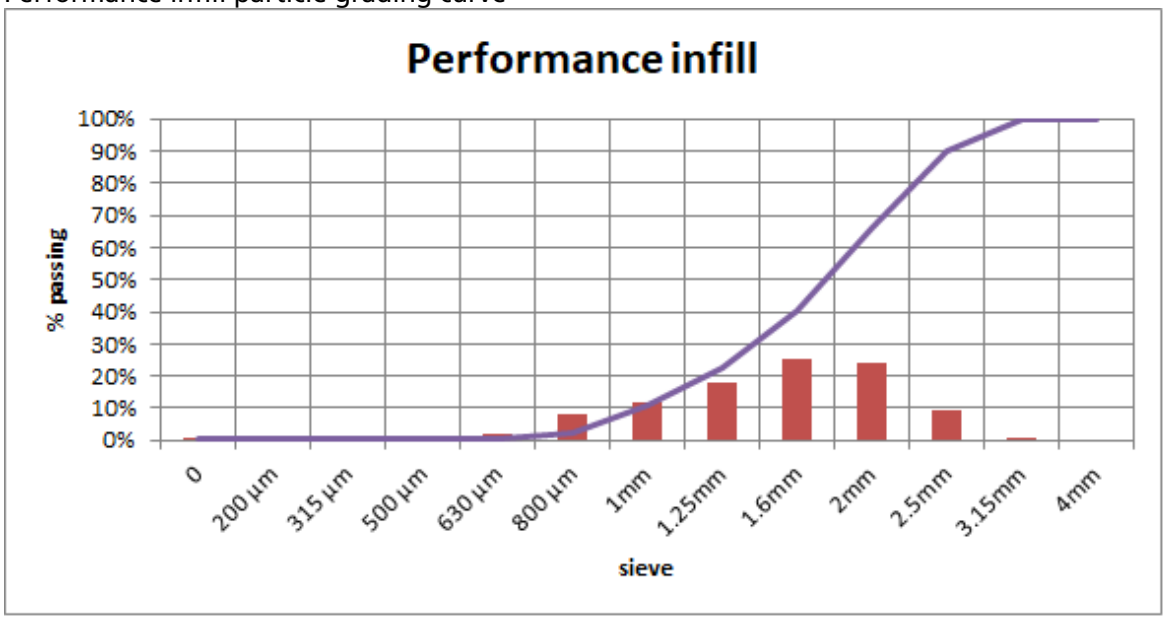
Name	Comment	Result
Angle Ball Rebound | Wet	45 - 80 %	68
Reduced Ball Roll | Initial | Dry (Quality)	4 - 10 m	6.8
Reduced Ball Roll | after simulated wear | 6'000 cycles (5*) | Dry	4 - 12 m	11.9
Reduced Ball Roll | after simulated wear | 6'000 cycles (5*) | Wet	4 - 12 m	10.9
Reduced Ball Roll | after 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 %	68.0
Shock absorption | Initial | Wet (Quality)	57 - 68 %	68.0
Shock absorption | after simulated wear | 6'000 cycles (5*)	57 - 68 %	64.0
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 %	65.00
Other, detail		
5 – Test Results | Player / Surface interaction		
Deformation | Initial | Dry (Quality)	4 - 11 mm	10.0
Deformation | Initial | Wet (Quality)	4 - 11 mm	10.0
Deformation | after simulated wear | 6'000 cycles (5*)	4 - 11 mm	8.5
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	
Skin / surface friction | Dry | 6'000 cycles	0.35 - 0.75 µ	0.74
Skin abrasion | Dry	± 30 %	19
Skin abrasion | Dry | 3'000 cycles	± 30 %	
Skin abrasion | Dry | 6'000 cycles	± 30 %	23
6 – Environmental impact (arficial, light, water)		
Pile yarn 1 | Colour change | after artificial weathering	≥ Grey scale 3	4

Name	Comment	Result
Pile yarn 2 | Colour change | after artificial weathering	≥ Grey scale 3	4-5
Pile yarn 3 | Colour change | after artificial weathering	≥ Grey scale 3	4-5
Pile yarn 1 | Peak Breakage Force | before artificial weathering		16.10
Pile yarn 1 | Peak Breakage Force | after artificial weathering		14.6
Pile yarn 1 | Peak Breakage Force | Green Reference value before artificial weathering		16.10
Pile yarn 1 | Peak Breakage Force | Variation after weathering from Green Reference value	Change ≤ 25 %	9.30
Pile yarn 2 | Peak Breakage Force | before artificial weathering		16.30
Pile yarn 2 | Peak Breakage Force | after artificial weathering		14.7
Pile yarn 2| Peak Breakage Force | Green Reference value before artificial weathering		16.30
Pile yarn 2 | Peak Breakage Force | Variation after weathering from Green Reference value	Change ≤ 25 %	9.80
Pile yarn 3 | Peak Breakage Force | before artificial weathering		56.90
Pile yarn 3 | Peak Breakage Force | after artificial weathering		48.9
Pile yarn 3| Peak Breakage Force | Green Reference value before artificial weathering		56.90
Pile yarn 3 | Peak Breakage Force | Variation after weathering from Green Reference value	Change ≤ 25 %	14.10
Polymeric infill | Colour change | after artificial weathering	≥ Grey scale 3	4
Polymeric infill | Visual change in composition | after artificial weathering	No change	No change
Complete system | Water permeability	> 180 mm/h	1273

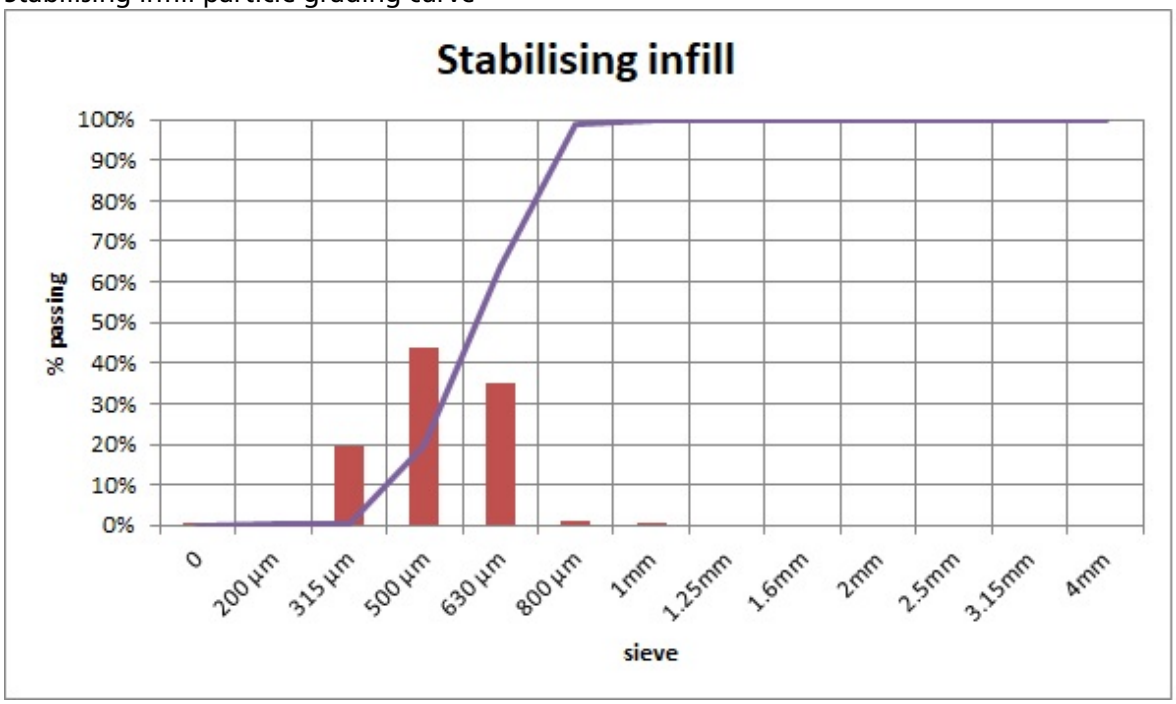
Name	Comment	Result
Stitched joints | Strength | un-aged	≥ 1000N/100mm	
Stitched joints | Strength | water aged	≥ 1000N/100mm	
Bonded joints | Strength | un-aged	≥ 75/100mm	155
Bonded joints | Strength | water aged	≥ 75/100mm	154
Carpet tuft | Withdrawal force | un-aged	≥ 40N	54
Carpet tuft | Withdrawal force | water aged	≥ 40N	49
Heat | Category	for information	2-3
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	0.23
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

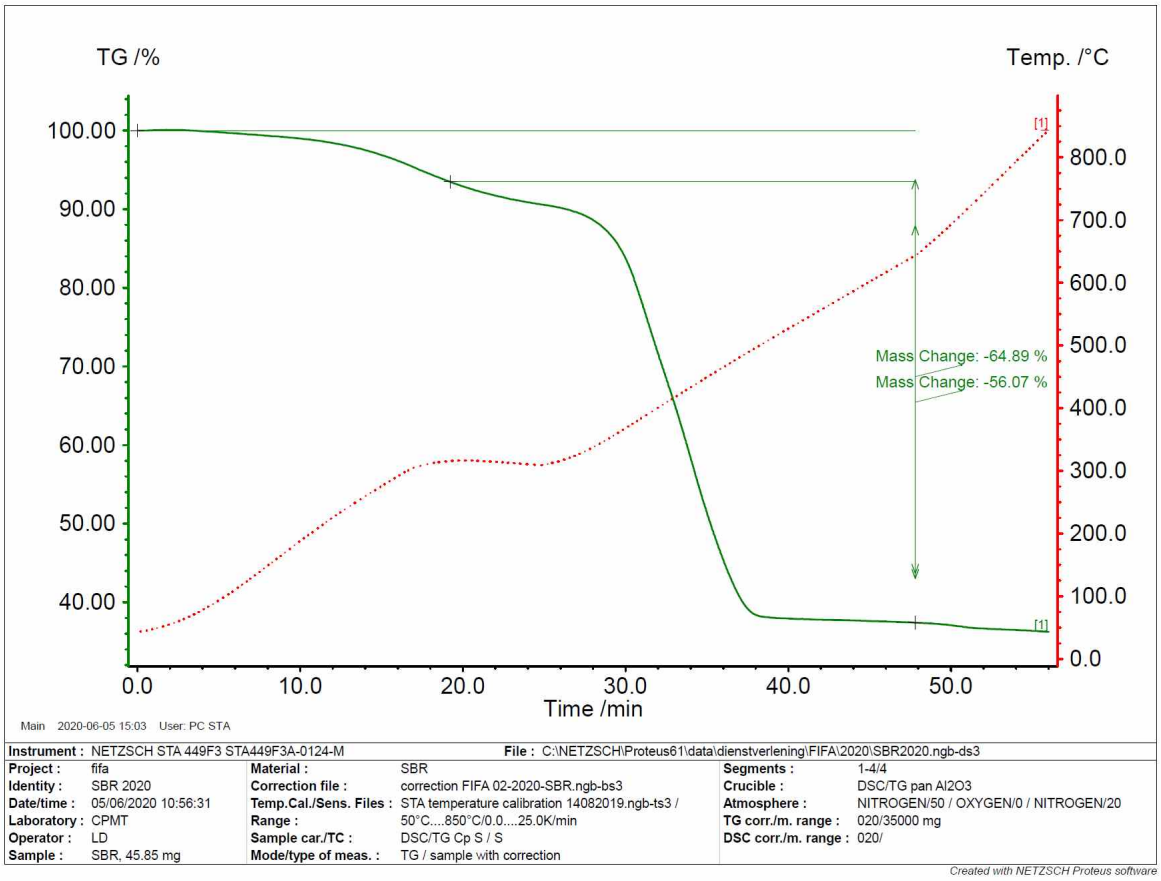
Performance infill particle grading curve



Stabilising infill particle grading curve



TGA of performance infill



Instrument :	NETZSCH STA 449F3 STA449F3A-0124-M		**File :** C:\NETZSCH\Proteus61\data\dienstverlening\FIFA\2020\SBR2020.ngb-ds3		
Project :	fifa	**Material :**	SBR	**Segments :**	1-4/4
Identity :	SBR 2020	**Correction file :**	correction FIFA 02-2020-SBR.ngb-bs3	**Crucible :**	DSC/TG pan Al2O3
Date/time :	05/06/2020 10:56:31	**Temp.Cal./Sens. Files :**	STA temperature calibration 14082019.ngb-ts3 /	**Atmosphere :**	NITROGEN/50 / OXYGEN/0 / NITROGEN/20
Laboratory :	CPMT	**Range :**	50°C....850°C/0.0....25.0K/min	**TG corr./m. range :**	020/35000 mg
Operator :	LD	**Sample car./TC :**	DSC/TG Cp S / S	**DSC corr./m. range :**	020/
Sample :	SBR, 45.85 mg	**Mode/type of meas. :**	TG / sample with correction		

Created with NETZSCH Proteus software

Simulated wear - Before 1

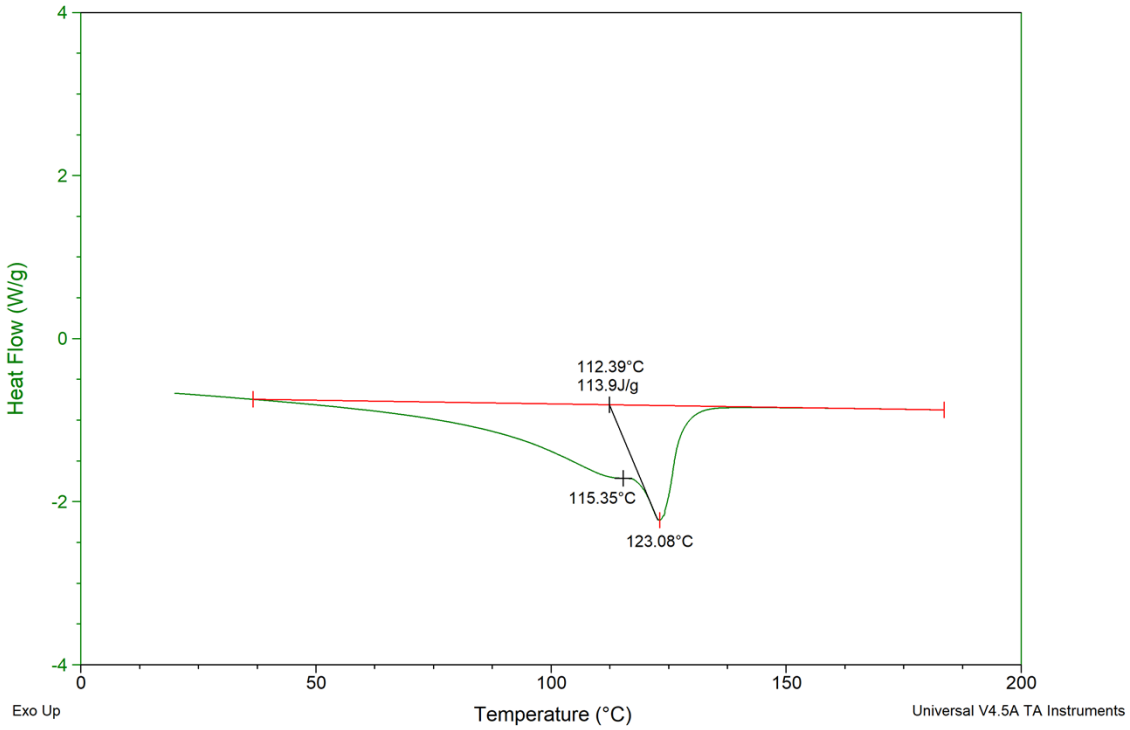
Simulated wear - After 1

Yarn Characteristics DSC

Sample: 20-0522 Curled Dark green
Size: 6.8800 mg
Method: methode kunstgras FIFA

DSC

File: V:...\20-0522\DSC\CURLED DARK GREEN.00
Operator: SDB
Run Date: 12-Jun-2020 23:36
Instrument: DSC Q2000 V24.11 Build 124

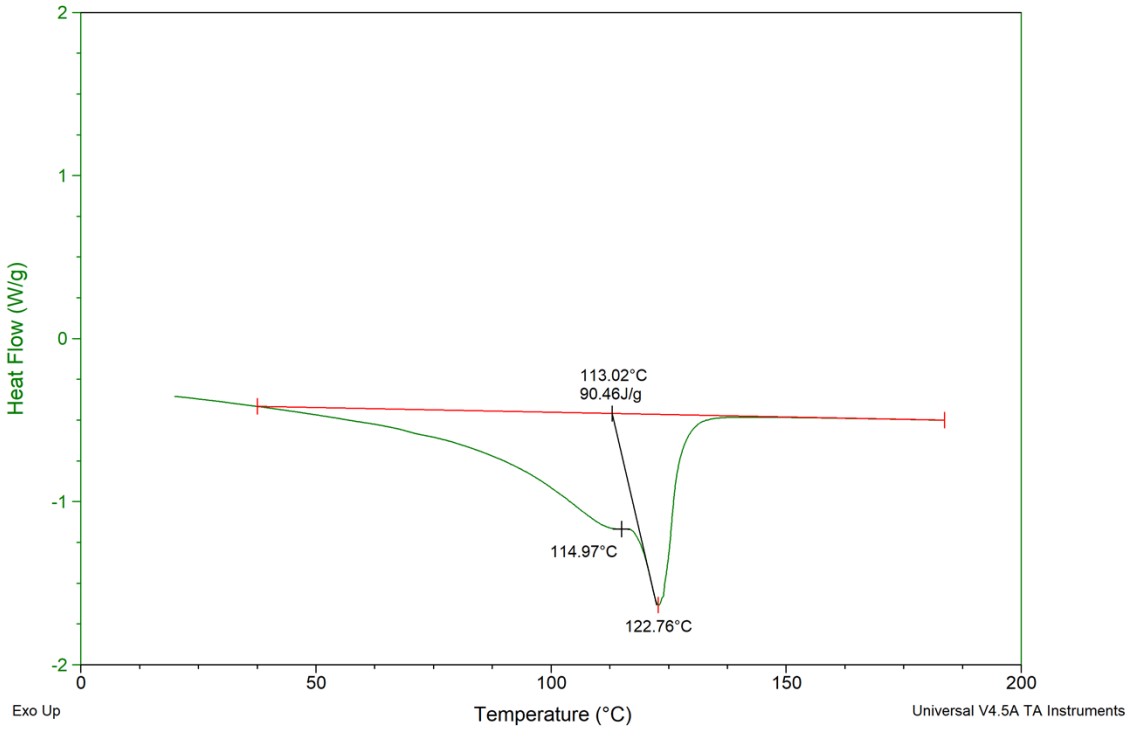


Yarn Characteristics DSC - 2

Sample: 20-0522 Curled light green
Size: 6.5800 mg
Method: methode kunstgras FIFA

DSC

File: V:...\20-0522\DSC\CURLED LIGHT GREEN.00
Operator: SDB
Run Date: 11-Jun-2020 00:32
Instrument: DSC Q2000 V24.11 Build 124

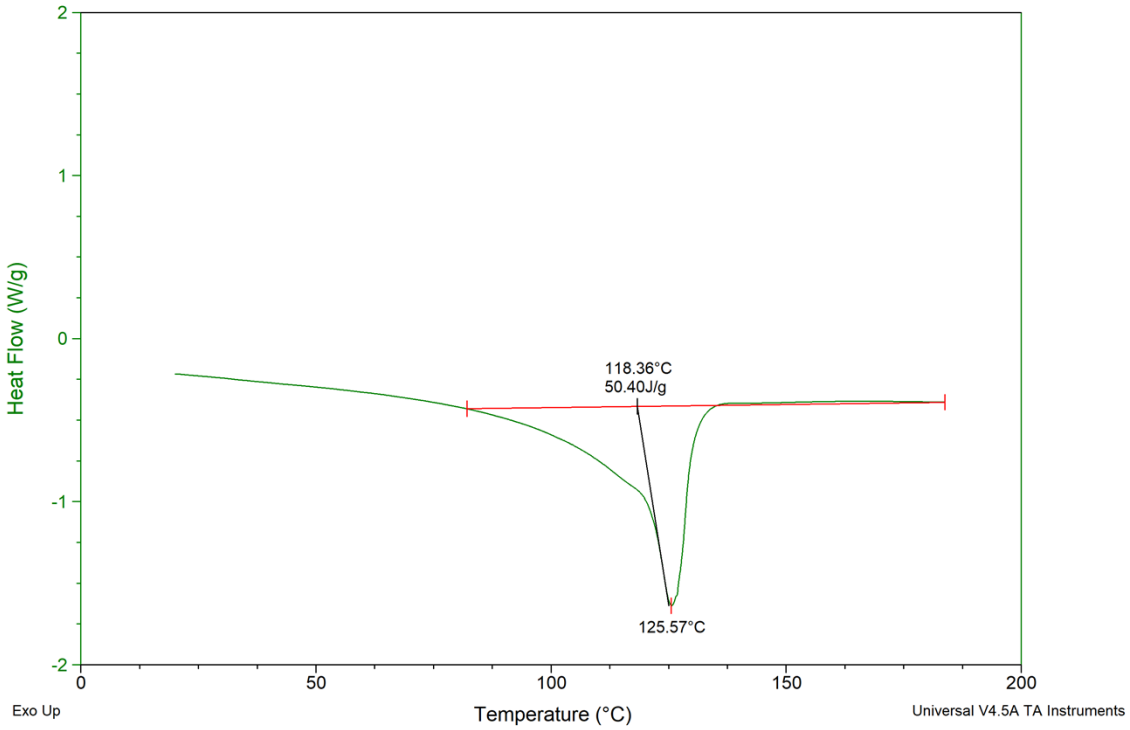


Yarn Characteristics DSC - 3

Sample: 20-0522 Green Tape
Size: 6.5400 mg
Method: methode kunstgras FIFA

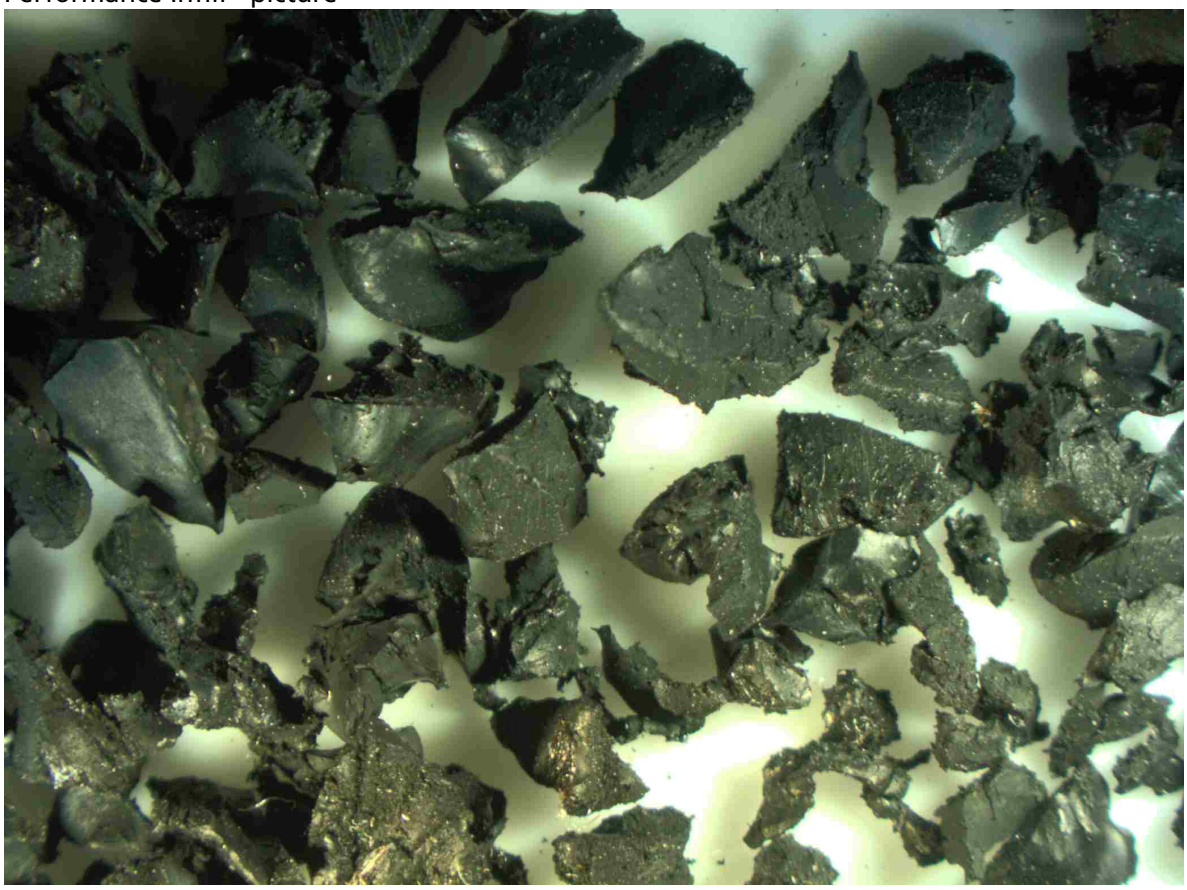
DSC

File: V:...\DSC\20-0522 DSC\Green Tape.001
Operator: SDB
Run Date: 10-Jun-2020 23:42
Instrument: DSC Q2000 V24.11 Build 124

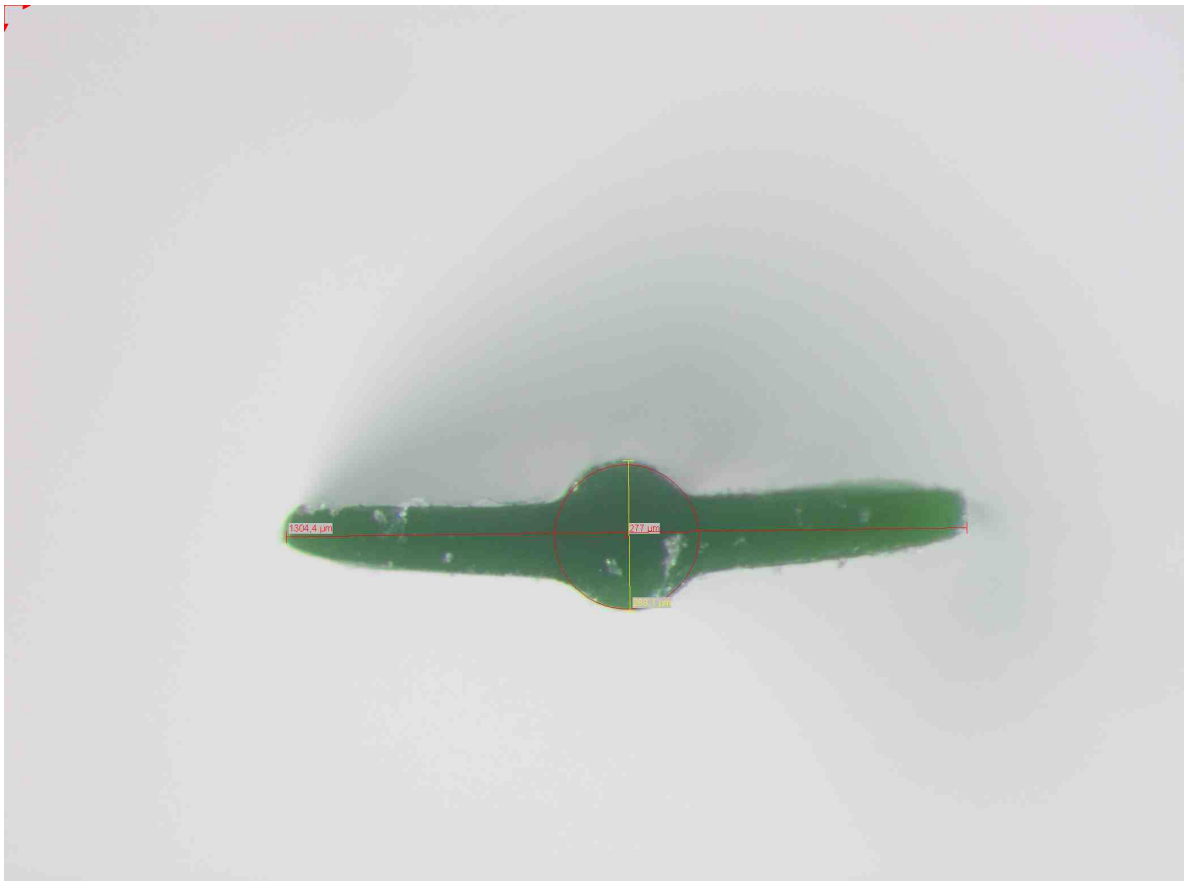


Stabilising Infill - picture

Performance Infill - picture



Cross-section Yarn 1



Cross-section Yarn 2

Cross-section Yarn 3