FIFA LABORATORY TEST REPORT

TM Football Turf I 2015
01.01.2015

Product	IRON GRASS
FIFA Licensee	[redacted]
Test Institute	Labosport Italia S.r.l.

Test Number	113894
External Test Number	21-0385IT
Date of Test	25.06.2021
Test Result	Passed
Quality Level	FIFA Quality & Quality PRO
Test Type	Initial

Digitally signed by Volcu Veaceslav
Date: 2025.05.26 14:39:46 EEST
Reason: MoldSign Signature
Location: Moldova
MOLDOVA EUROPEANĂ

Licensee

Main Address

Name	[redacted]
Address	[redacted]
ZIP / City	[redacted] ISTANBUL
Website	
Contact Email	sa[redacted]m.tr
Contact Phone	

Digitally signed by Rotari Radu
Date: 2024.11.01 19:28:46 EET
Reason: MoldSign Signature
Location: Moldova

Test institute

Main Address

Name	Labosport Italia S.r.l.
Address	Via Monza, 80
ZIP / City	23870 / CERNUSCO LOMBARDONE
Website	www.labosport.com
Contact Email	labosport@labosport.it
Contact Phone	+39/ 039 896 26 84

Approval

Test Institute Director	Roberto Armeni
Signature	
Date	09.07.2021

Test Institute Engineer	Gabriele Greco
Signature	
Date	09.07.2021

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		Splash Grass
Product ID		-
Synthetic Turf System		-
Performance infill		EPDM
Stabilising infill		SILICA
Shock-pad or elastic layer		-
Sub-base composition		Concrete
2 - Test Details | Test Institute		
Date(s) of test		25.06.2021
Report created by		Gabriele Greco
Laboratory Test report number		21-0385IT

Name	Comment	Result
Test Institute Project number		21-0385IT
3 – Product Declaration (Manufacturer)		
Manufacturer		[redacted]
Tuft pattern		Straight
Yarn manufacturer | yarn 1		TEN CATE GRASS MIDDLE EAST
Detailed tuft decitex (Dtex) [g/10000m]		6000
Product name, code | yarn 1		Splash 2000 XQ Field Green
Pile yarn profile | yarn 1		-
Pile thickness (µ m) | yarn 1		330.0
Pile colour (RAL) | value 1 | yarn 1		6013
Pile colour (RAL) | value 2 | yarn 1		-
Pile colour (RAL) | value 3 | yarn 1		-
Pile width (mm) | yarn 1		1.20
Number of tufts/m2 | yarn 1	ISO1773	9000.00
Pile length (mm) | yarn 1	ISO 2549	57.50
Pile weight (g/m2) | yarn 1	ISO 8543	662.50
Pile yarn characterization | yarn 1		PE
Pile yarn dtex | yarn 1		6000
Yarn manufacturer | yarn 2		TEN CATE GRASS MIDDLE EAST
Product name, code | yarn 2		Splash 2000 XQ Lime Green
Pile yarn profile | yarn 2		-
Pile thickness (µ m) | yarn 2		330.0
Pile colour (RAL) | value 1 | yarn 2		1020
Pile colour (RAL) | value 2 | yarn 2		-
Pile colour (RAL) | value 3 | yarn 2		-
Pile width (mm) | yarn 2		1.20

Name	Comment	Result
Number of tufts/m2 | yarn 2	ISO1773	9000.00
Pile length (mm) | yarn 2	ISO 2549	57.50
Pile weight (g/m2) | yarn 2	ISO 8543	662.50
Pile yarn characterization | yarn 2		PE
Pile yarn dtex | yarn 2		6000.0
Yarn manufacturer | yarn 3		-
Product name, code | yarn 3		-
Pile yarn profile | yarn 3		-
Pile thickness (µm) | yarn 3		0.0
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		0.00
Number of tufts/m2 | yarn 3	ISO1773	0.00
Pile length (mm) | yarn 3	ISO 2549	0.00
Pile weight (g/m2) | yarn 3	ISO 8543	0.00
Pile yarn characterization | yarn 3		-
Pile yarn dtex | yarn 3		0.0
Primary backing | Product name, code		H18
Primary backing | Manufacturer		Tencate
Re-enforcement scrim | Product name, code		-
Re-enforcement scrim | Manufacturer		-
Secondary backing | Product name, code		SBR Latex

Name	Comment	Result
Secondary backing | Manufacturer		Styron
Secondary backing | Dry application rate (g/m2)		1100.0
Carpet | Minimum tuft withdrawal force (N)		40
Carpet | Carpet mass per unit area [g/m2]		2600.0
Method of jointing		Bonded
Bonded joints | Adhesive brand name		Ayka Floor
Bonded joints | Adhesive manufacturer		Ayka Floor
Bonded joints | Application rate (g/m)		200
Bonded joints | Jointing film brand name		Helmetin
Bonded joints | Jointing film manufacturer		Serta Teksil
Stitched seams | Tread brand name/product code		-
Stitched seams | Tread manufacturer		-
Stitched seams | Stitch rate (stitch per lm)		0.000
Performance Infill | Product name, code		EPDM RUBBER
Performance Infill | Manufacturer		
Performance Infill | Material type		BLACK EPDM
Performance Infill | Material grading		1.6 - 3.15
Performance Infill | Particle shape	prEN 14955	A2-B3
Performance Infill | Particle size range	EN 933-Part 1	1.6 - 3.15

Name	Comment	Result
Performance Infill | Bulk density (g/cm3)	EN 1097-3	0.450
Performance Infill | Application rate (kg/m2)		19.0
Stabilising Infill | Product name, code		Silica Sand
Stabilising Infill | Manufacturer		Emek, Fares Kum
Stabilising Infill | Material type		Silica
Stabilising Infill | Material grading		0.315 - 0.8
Stabilising Infill | Particle shape	prEN 14955	Round high sphericity-C1
Stabilising Infill | Particle size range	EN 933-Part 1	0.315 - 0.8
Stabilising Infill | Bulk density (g/cm3)	EN 1097-3	1.50
Stabilising Infill | Application rate (kg/m2)		15.0
Shockpad, E-layer | Product name, code		-
Shockpad, E-layer | Manufacturer		-
Shockpad, E-layer | Type		-
Shockpad, E-layer | Composition		-
Shockpad, E-layer | Bulk density (g/cm3)		0.00
Shockpad, E-layer| Thickness	EN 1969	0.0
Shockpad, E-layer | Shock absorption (%)	FIFA 4a	0.0
Shockpad, E-layer | Deformation	FIFA 5a	0.0
Shockpad, E-layer | Tensile strength (MPa)		0.00
Shockpad, E-layer | Mass per unit area (kg/m2)		0.0
Other, detail		Due to different DSC devices and potential difference in the test method used, the shape

Name	Comment	Result
		and peak temperatures of the DSC analysis may differ from the FIFA requirement.
3 – Test Results | Player / Surface Interaction		
Rotational Resistance | Initial | Dry (Quality)	27 - 48 Nm	39
Rotational Resistance | Initial | Dry (Pro)	32 - 43 Nm	39
Rotational Resistance | Initial | Wet (Quality)	27 - 48 Nm	37
Rotational Resistance | Initial | Wet (Pro)	32 - 43 Nm	37
Rotational Resistance | after simulated wear | 3'000 cycles (5*)	32 - 43 Nm	39
Rotational Resistance | after simulated wear | 3'000 cycles (20*)	32 - 43 Nm	0
Rotational Resistance | after simulated wear | 6'000 cycles (5*)	27 - 48 Nm	41
Rotational Resistance | after simulated wear | 6'000 cycles (20*)	27 - 48 Nm	0
3 – Test Results | Product identification field product		
Performance infill | Theremographic analysis | Organic [%] - Product Declaration		0.0
Performance infill | Theremographic analysis | Elastomer [%] - Product Declaration		0.0
Performance infill | Theremographic analysis | Inorganic [%] - Product Declaration		0.0
4 – Product Identification		

Name	Comment	Result
Artificial Turf | Carpet mass per unit area [g/m2]		2772
Artificial Turf | Tufts per unit area [m2]		9450
Artificial Turf | Pile lenght above backing [mm]		58.0
Artificial Turf | Pile weight [g/m2]		1346
Detailed tuft decitex (Dtex) [g/10000m]		11710
Artificial Turf | Water permeability of carpet [mm/h]		2734
Artificial Turf | Free pile height		13
Performance infill | Particle size range [mm]		1.25 - 3.15
Performance infill | Particle shape		A2
Performance infill | Bulk density [g/cm3]		0.470
Performance infill | Infill depth [mm]		46
Performance infill | Thermographic analysis | organic [%]		48
Performance infill | Theremographic analysis | inorganic [%]		52
Stabilising infill | Particle size range [mm]		0.315 - 1.0
Stabilising infill | Particle shape		C1
Stabilising infill | Bulk density [g/cm3]		1.36
Shock pad / E-layer | Shock absorption [%]	if part of supplied system	0.0
Shock pad / E-layer | Deformation	if part of supplied system	0.0

Name	Comment	Result
Shock pad / E-layer | Thickness	if part of supplied system	0.0
Other, detail		Pile yarn dtex yarn 1 declaration 6000 dtex; pile yarn 1 identification 5819 dtex -3.0%. Pile yarn dtex yarn 2 declaration 6000 dtex; pile yarn 2 identification 5891 dtex -1.8%.
5 – Test Results | Ball / Surface interaction		
Vertical Ball Rebound | Initial | Dry (Quality)	0.6 - 1m	0.84
Vertical Ball Rebound | Initial | Dry (Pro)	0.6 - 0.85m	0.84
Vertical Ball Rebound | Initial | Wet (Quality)	0.6 - 1m	0.79
Vertical Ball Rebound | Initial | Wet (Pro)	0.6 - 0.85m	0.79
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	1.00
Vertical Ball Rebound | after simulated wear | 3'000 cycles (20*)	0.6 - 0.85m	0.00
Vertical Ball Rebound | after simulated wear | 6'000 cycles (20*)	0.6 - 1m	0.00
Angle Ball Rebound | Dry	45 - 80 %	56
Angle Ball Rebound | Wet	45 - 80 %	67
Reduced Ball Roll | Initial | Dry (Quality)	4 - 10 m	6.6
Reduced Ball Roll | Initial | Dry (Pro)	4 - 8 m	6.6
Reduced Ball Roll | after simulated wear | 3'000 cycles (5*) | Dry	4 - 8 m	7.3

Name	Comment	Result
Reduced Ball Roll | after simulated wear | 3'000 cycles (5*) | Wet	4 - 8 m	7.8
Reduced Ball Roll | after simulated wear | 3'000 cycles (20*) | Dry	4 - 8 m	0.0
Reduced Ball Roll | after simulated wear | 3'000 cycles (20*) | Wet	4 - 8 m	0.0
Reduced Ball Roll | after simulated wear | 6'000 cycles (5*) | Dry	4 - 12 m	8.4
Reduced Ball Roll | after simulated wear | 6'000 cycles (5*) | Wet	4 - 12 m	9.1
Reduced Ball Roll | after simulated wear | 6'000 cycles (20*)| Dry	4 - 12 m	0.0
Reduced Ball Roll | after simulated wear | 6'000 cycles (20*)| Wet	4 - 12 m	0.0
Shock absorption | Initial | Dry (Quality)	57 - 68 %	66.8
Shock absorption | Initial | Dry (Pro)	62 - 68 %	66.8
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 %	62.4
Shock absorption | after simulated wear | 3'000 cycles (20*)	62 - 68 %	0.0
Shock absorption | after simulated wear | 6'000 cycles (5*)	57 - 68 %	59.1
Shock absorption | after simulated wear | 6'000 cycles (20*)	57 - 68 %	0.0

Name	Comment	Result
Shock absorption | 50°C	57 - 68 %	66.70
Shock absorption | -5°C	57 - 68 %	62.20
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	9.5
Deformation | Initial | Wet (Pro)	4 - 10 mm	9.5
Deformation | after simulated wear | 3'000 cycles (5*)	4 - 10 mm	8.5
Deformation | after simulated wear | 3'000 cycles (20*)	4 - 10 mm	0.0
Deformation | after simulated wear | 6'000 cycles (5*)	4 - 11 mm	8.5
Deformation | after simulated wear | 6'000 cycles (20*)	4 - 11 mm	0.0
Skin / surface friction | Dry	0.35 - 0.75 µ	0.51
Skin / surface friction | Dry | 3'000 cycles	0.35 - 0.75 µ	0.57
Skin / surface friction | Dry | 6'000 cycles	0.35 - 0.75 µ	0.63
Skin abrasion | Dry	± 30 %	17
Skin abrasion | Dry | 3'000 cycles	± 30 %	20
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	4-5
Pile yarn 2 | Colour change | after artificial weathering	≥ Grey scale 3	4

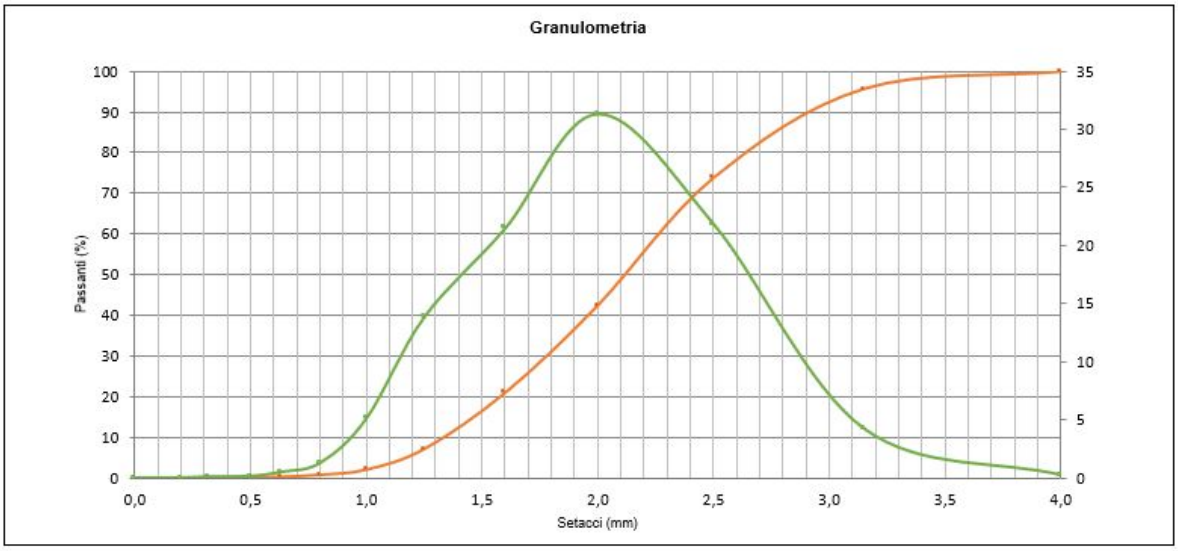
Name	Comment	Result
Pile yarn 3 | Colour change | after artificial weathering	≥ Grey scale 3	-
Pile yarn 1 | Peak Breakage Force | before artificial weathering		13.50
Pile yarn 1 | Peak Breakage Force | after artificial weathering		12.8
Pile yarn 1 | Peak Breakage Force | Green Reference value before artificial weathering		13.50
Pile yarn 1 | Peak Breakage Force | Variation after weathering from Green Reference value	Change ≤ 25 %	5.00
Pile yarn 2 | Peak Breakage Force | before artificial weathering		14.60
Pile yarn 2 | Peak Breakage Force | after artificial weathering		14.50
Pile yarn 2| Peak Breakage Force | Green Reference value before artificial weathering		14.60
Pile yarn 2 | Peak Breakage Force | Variation after weathering from Green Reference value	Change ≤ 25 %	1.00
Pile yarn 3 | Peak Breakage Force | before artificial weathering		0.00
Pile yarn 3 | Peak Breakage Force | after artificial weathering		-
Pile yarn 3| Peak Breakage Force |		0.00

Name	Comment	Result
Green Reference value before artificial weathering		
Pile yarn 3 | Peak Breakage Force | Variation after weathering from Green Reference value	Change ≤ 25 %	0.00
Polymeric infill | Colour change | after artificial weathering	≥ Grey scale 3	5
Polymeric infill | Visual change in composition | after artificial weathering	No change	No change
Complete system | Water permeability	> 180 mm/h	1924
Stitched joints | Strength | un-aged	≥ 1000N/100mm	0
Stitched joints | Strength | water aged	≥ 1000N/100mm	0
Bonded joints | Strength | un-aged	≥ 75/100mm	100
Bonded joints | Strength | water aged	≥ 75/100mm	93
Carpet tuft | Withdrawal force | un-aged	≥ 40N	55
Carpet tuft | Withdrawal force | water aged	≥ 40N	54
Heat | Category	for information	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	0.00
Sub-base | Composition		-
Sub-base | Particle size range		-
Sub-base | Particle shape		-

Name	Comment	Result
Sub-base | Thickness		-
Sub-base | Compaction & test method		-
Other, detail		-
Turf | Product Report Details		
Shockpad, E-layer | Type Category		No Shockpad
Performance Infill | Material type Category		
Splash | Characteristics Category		≥ 1.5%

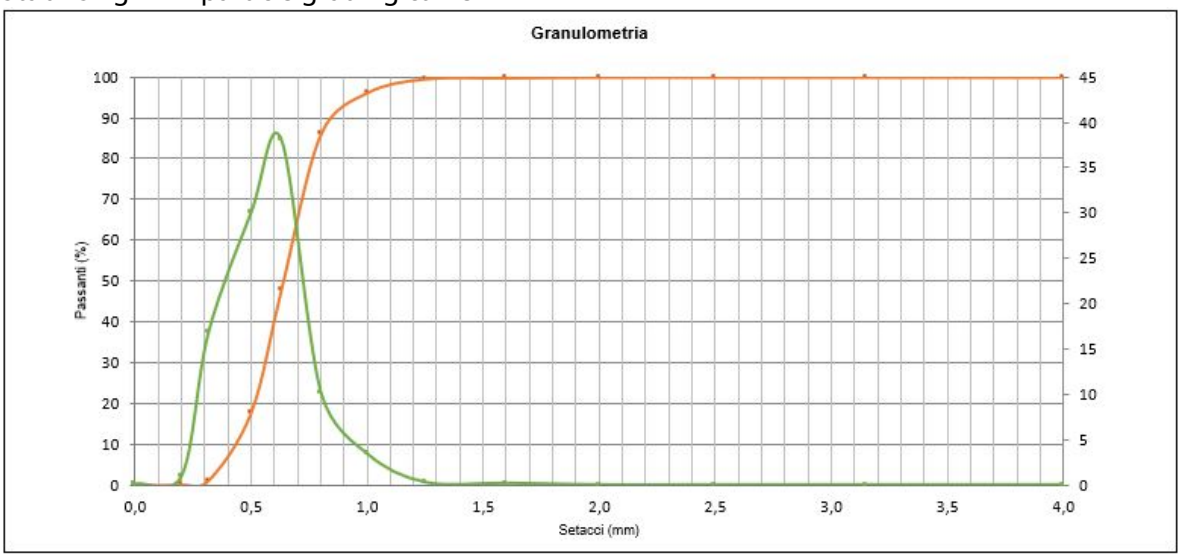
2 – Test Images

Performance infill particle grading curve



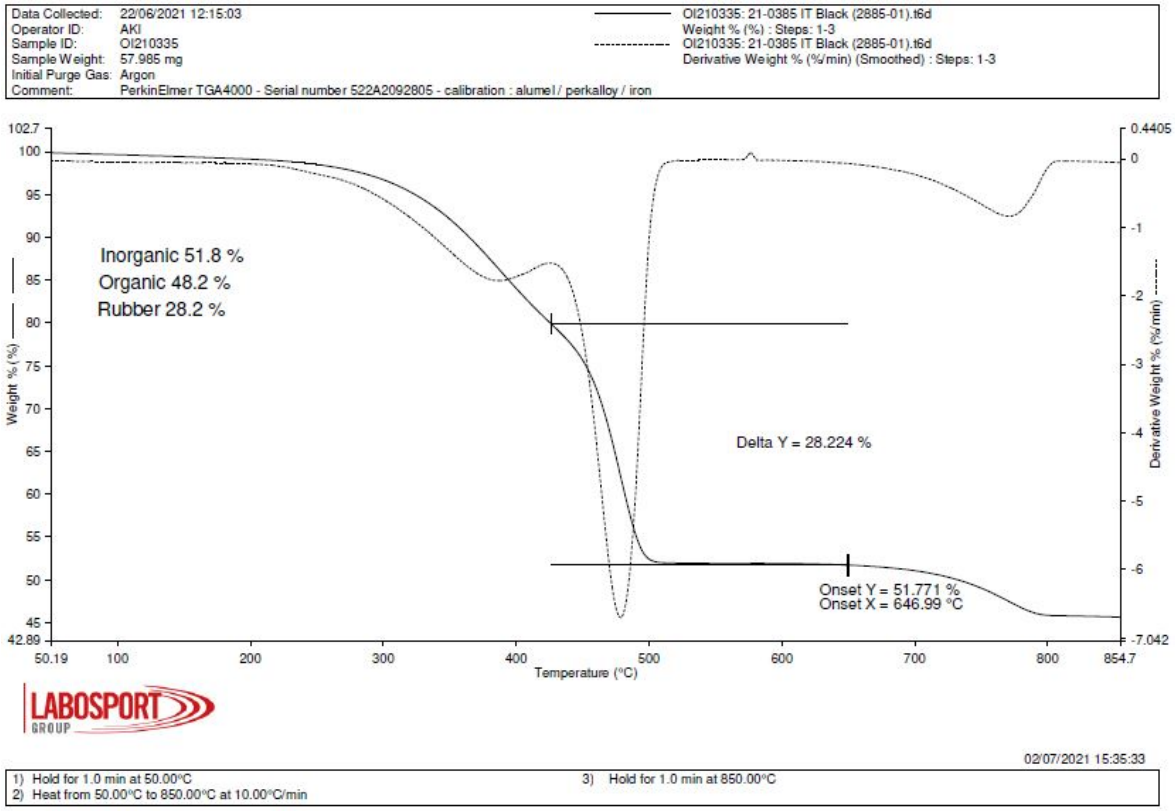
Setacci (mm)	0	0,2	0,315	0,5	0,63	0,8	1,0	1,25	1,6	2,0	2,5	3,15	4,0
Rifiutati (%)	0	0	0	0	0	1	5	14	21	31	22	4	0
Passanti (%)	0	0	0	0	0	1	2	7	21	42	74	96	100

Stabilising infill particle grading curve



Setacci (mm)	0	0,2	0,315	0,5	0,63	0,8	1,0	1,25	1,6	2,0	2,5	3,15	4,0
Rifiutati (%)	0	1	17	30	38	10	3	0	0	0	0	0	0
Passanti (%)	0	0	1	18	48	86	96	100	100	100	100	100	100

TGA of performance infill



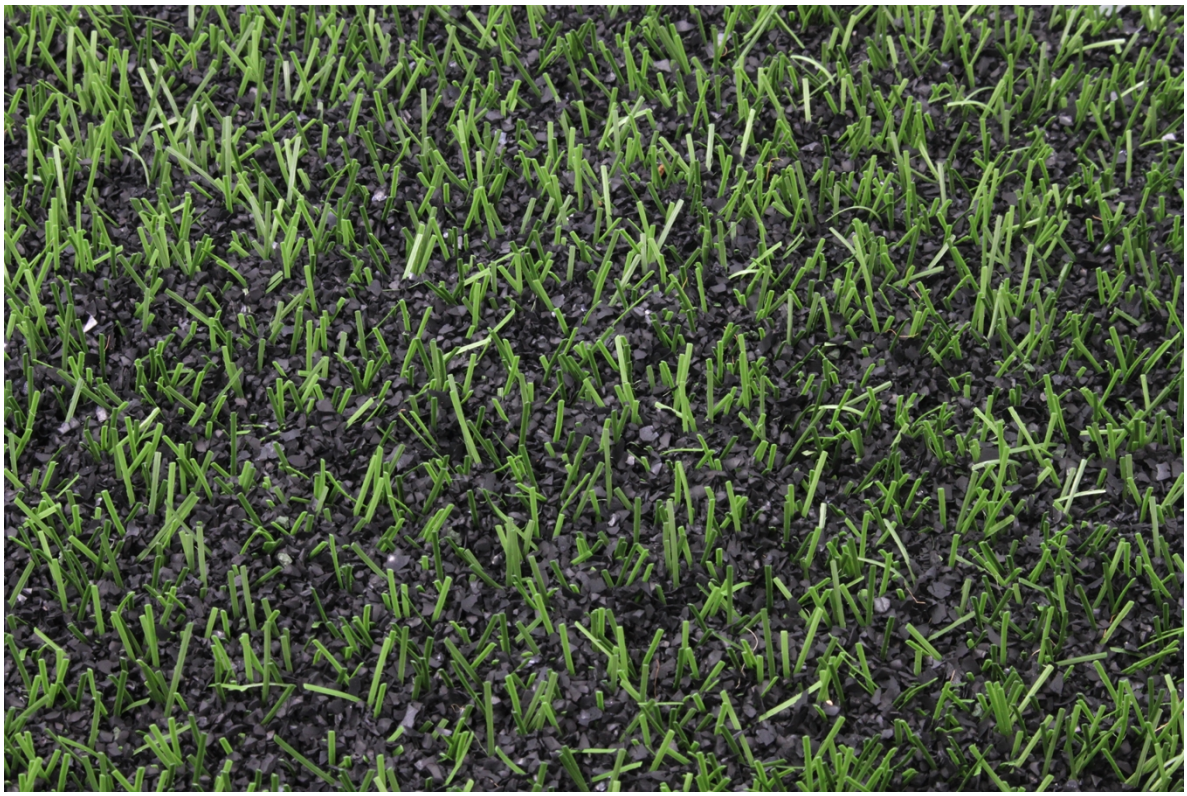
Simulated wear - Before 1

Simulated wear - Before 2

Simulated wear - After 1

Simulated wear - After 2

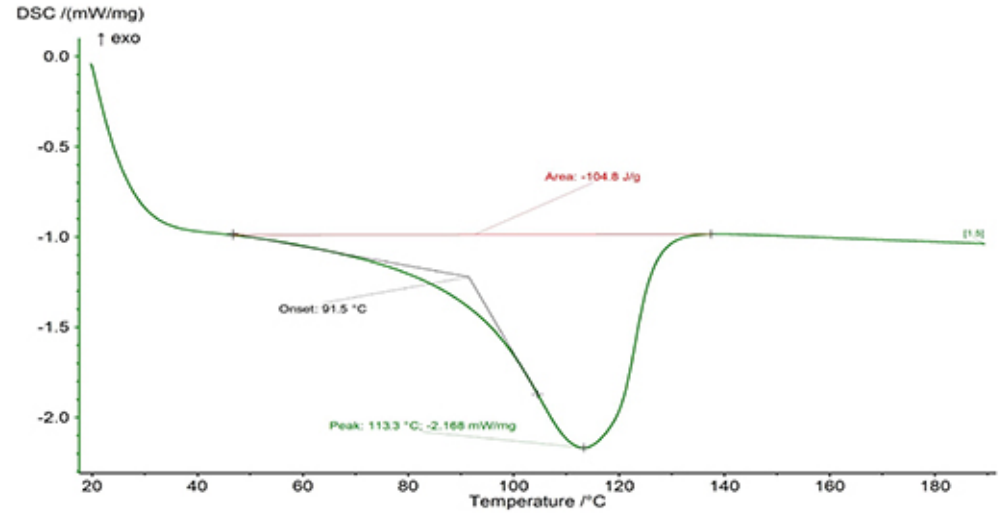
Simulated wear - After 3



Simulated wear - After 4

Yarn Characteristics DSC

Laboratory:	Labosport Italia Srl	**Identity:**	21-0385/T
Project:	21-0385/T	**Sample:**	DARK GREEN
Operator:	Matteo	**Sample mass:**	7.88 mg
Date/Time:	08/06/2021 12:09:36	**Serial number**	DSC3500A-1254-L

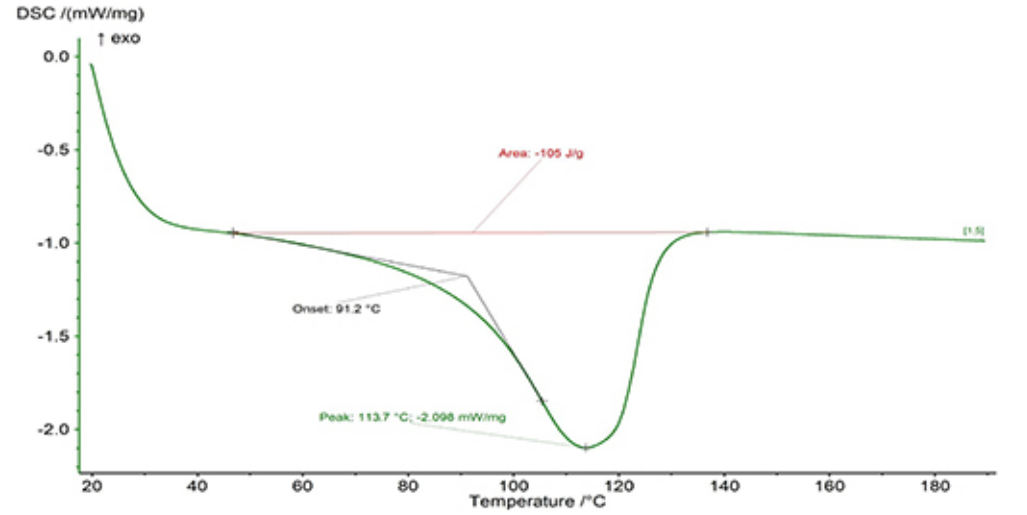


TEST CYCLES:
1) Heat from 20,0 °C to 190,0 °C at 20,0 °C/min
2) Hold for 5,0 min at 190,0 °C
3) Cool from 190 °C to 20,0 °C at 20,0 °C/min
4) Hold for 5,0 min at 20,0 °
5) Heat from 20,0 °C to 190,0 °C at 20,0 °C/min

NETZSCH DSC 3500 SERIES

Yarn Characteristics DSC - 2

Laboratory:	Labosport Italia Srl	**Identity:**	21-0385/T
Project:	21-0385/T	**Sample:**	LIGHT GREEN
Operator:	Matteo	**Sample mass:**	7.93 mg
Date/Time:	08/06/2021 12:56:27	**Serial number**	DSC3500A-1254-L



TEST CYCLES:

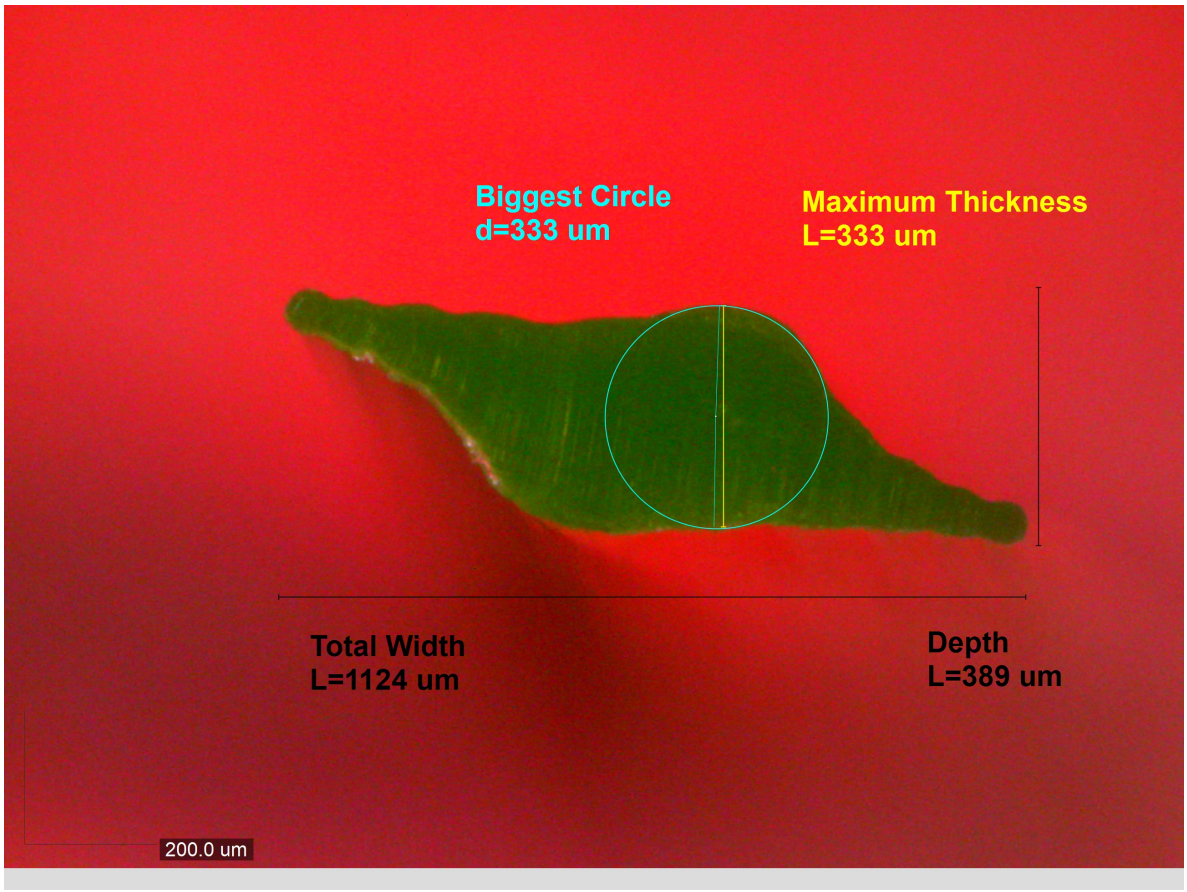
1) Heat from 20,0 °C to 190,0 °C at 20,0 °C/min
2) Hold for 5,0 min at 190,0 °C
3) Cool from 190 °C to 20,0 °C at 20,0 °C/min
4) Hold for 5,0 min at 20,0 °
5) Heat from 20,0 °C to 190,0 °C at 20,0 °C/min

NETZSCH DSC 3500 SERIES

Stabilising Infill - picture

Performance Infill - picture

Cross-section Yarn 1



Cross-section Yarn 2