FIFA LABORATORY TEST REPORT

Test manual 2015
01.01.2015

Product	Vmax 50-13 PU SP10
FIFA Licensee	CoCreation Grass Co., Ltd.
Test Institute	Labosport SAS

Test Number	88954
External Test Number	R190977-A2
Date of Test	15.07.2019
Test Result	Passed
Quality Level	FIFA Quality
Test Type	Initial

Licensee

Main Address

Name	CoCreation Grass Co., Ltd.
Address	CoCreation Grass Corporation, Ltd. Floor 18th Dadi Building, No. 56, Huaqiao Road
ZIP / City	210029 / NANJING
Website	www.ccgrass.com
Contact Email	
Contact Phone	

Test institute

Main Address

Name	Labosport SAS
Address	Labosport SAS Technoparc du Circuit des 24 heures
ZIP / City	72100 / LE MANS
Website	
Contact Email	
Contact Phone	

Approval

Test Institute Director	Aurélien LE BLAN
Signature	
Date	30.08.2019

Test Institute Engineer	Steve BAZEILLE
Signature	
Date	30.08.2019

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		Vmax 50-13 PU SP10
Product ID		Vmax 50-13 PU
Synthetic Turf System		Vmax 50-13 PU
Performance infill		SBR
Stabilising infill		Sand
Shock-pad or elastic layer		J-Drain Turfcore
Sub-base composition		Concrete
2 - Test Details | Test Institute		
Date(s) of test		15.07.2019
Report created by		Steve BAZEILLE
Other Test Engineer on site		
Laboratory Test report number		R190977-A2
Test Institute Project number		19-0977
3 – Product Declaration (Manufacturer)		
Manufacturer		CCGrass
Tuft pattern		Straight
Yarn manufacturer | yarn 1		CCGrass
Product name, code | yarn 1		Venus
Pile yarn profile | yarn 1		V shape
Pile thickness (µ m) | yarn 1		260.0
Pile colour (RAL) | value 1 | yarn 1		Emerald +

Name	Comment	Result
Pile colour (RAL) | value 2 | yarn 1		
Pile colour (RAL) | value 3 | yarn 1		
Pile width (mm) | yarn 1		1.10
Number of tufts/m2 | yarn 1	ISO1773	6825.00
Pile length (mm) | yarn 1	ISO 2549	50.00
Pile weight (g/m2) | yarn 1	ISO 8543	453.50
Pile yarn characterization | yarn 1		PE
Pile yarn dtex | yarn 1		6000
Yarn manufacturer | yarn 2		CCGrass
Product name, code | yarn 2		Venus
Pile yarn profile | yarn 2		V shape
Pile thickness (µ m) | yarn 2		260.0
Pile colour (RAL) | value 1 | yarn 2		Lime +
Pile colour (RAL) | value 2 | yarn 2		
Pile colour (RAL) | value 3 | yarn 2		
Pile width (mm) | yarn 2		1.10
Number of tufts/m2 | yarn 2	ISO1773	6825.00
Pile length (mm) | yarn 2	ISO 2549	50.00
Pile weight (g/m2) | yarn 2	ISO 8543	453.50
Pile yarn characterization | yarn 2		PE
Pile yarn dtex | yarn 2		6000.0
Yarn manufacturer | yarn 3		CCG
Product name, code | yarn 3		YEII
Pile yarn profile | yarn 3		Fibrillated
Pile thickness (µ m) | yarn 3		85.0

Name	Comment	Result
Pile colour (RAL) | value 1 | yarn 3		Emerald
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	6825.00
Pile length (mm) | yarn 3	ISO 2549	50.00
Pile weight (g/m2) | yarn 3	ISO 8543	416.00
Pile yarn characterization | yarn 3		PE
Pile yarn dtex | yarn 3		5500.0
Primary backing | Product name, code		PP
Primary backing | Manufacturer		Yangzhouhengxin
Re-enforcement scrim | Product name, code		
Re-enforcement scrim | Manufacturer		
Secondary backing | Product name, code		PU
Secondary backing | Manufacturer		CCGrass
Secondary backing | Dry application rate (g/m2)		750.0
Carpet | Minimum tuft withdrawel force (N)		30
Carpet | Carpet mass per unit area (g/m2)		2273.0
Method of jointing		Bonded
Bonded joints | Adhesive brand name		
Bonded joints | Adhesive manufacturer		Beijinghanfeng
Bonded joints | Application rate (g/m)		

Name	Comment	Result
Bonded joints | Jointing film brand name		
Bonded joints | Jointing film manufacturer		Yangzhouhengxin
Stitched seams | Tread brand name/product code		
Stitched seams | Tread manufacturer		
Stitched seams | Stitch rate (stitch per lm)		
Performance Infill | Product name, code		Ambient Ground 10/20 M
Performance Infill | Manufacturer		Various
Performance Infill | Material type		SBR
Performance Infill | Material grading		0.63 - 2.0 mm
Performance Infill | Particle shape	prEN 14955	Angular A2
Performance Infill | Particle size range	EN 933-Part 1	0.63 - 2.0 mm
Performance Infill | Bulk density (g/cm3)	EN 1097-3	0.400
Performance Infill | Application rate (kg/m2)		10.0
Stabilising Infill | Product name, code		Sand
Stabilising Infill | Manufacturer		Various
Stabilising Infill | Material type		Sand
Stabilising Infill | Material grading		0.5 - 1.0mm
Stabilising Infill | Particle shape	prEN 14955	Rounded
Stabilising Infill | Particle size range	EN 933-Part 1	0.5 - 1.0mm
Stabilising Infill | Bulk density (g/cm3)	EN 1097-3	1.50
Stabilising Infill | Application rate (kg/m2)		22.0
Shockpad, E-layer | Product name, code		J-Drain Turfcore
Shockpad, E-layer | Manufacturer		JDR Entreprises Inc

Name	Comment	Result
Shockpad, E-layer | Type		Prefabricated
Shockpad, E-layer | Composition		Polypropylene
Shockpad, E-layer | Bulk density (g/cm3)		
Shockpad, E-layer| Thickness	EN 1969	10.0
Shockpad, E-layer | Shock absorption (%)	FIFA 4a	44.0
Shockpad, E-layer | Deformation	FIFA 5a	3.8
Shockpad, E-layer | Tensile strength (MPa)		0.15
Shockpad, E-layer | Mass per unit area (kg/m2)		1.0
Other, detail		
4 – Product Identification		
Artificial Turf | Carpet mass per unit area [g/m2]		2076
Artificial Turf | Tufts per unit area [m2]		6989
Artificial Turf | Pile lenght above backing [mm]		50.0
Artificial Turf | Pile weight [g/m2]		1268
Artificial Turf | Water permeability of carpet [mm/h]		1479
Artificial Turf | Free pile height		13
Performance infill | Particle size range [mm]		0.8 - 2.0 mm
Performance infill | Particle shape		Angular
Performance infill | Bulk density [g/cm3]		0.410
Performance infill | Infill depth [mm]		24
Performance infill | Thermographic analysis | organic [%]		64
Performance infill | Theremographic analysis | inorganic [%]		36

Name	Comment	Result
Stabilising infill | Particle size range [mm]		0.5 - 1.0
Stabilising infill | Particle shape		Rounded
Stabilising infill | Bulk density [g/cm3]		1.57
Shock pad / E-layer | Shock absorption [%]	if part of supplied system	44.0
Shock pad / E-layer | Deformation	if part of supplied system	3.8
Shock pad / E-layer | Thickness	if part of supplied system	9.5
Other, detail		Total Infill Thickness = 13mm Sand + 24mm SBR = 37mm
5 – Test Results | Ball / Surface interaction		
Vertical Ball Rebound | Initial | Dry (Quality)	0.6 - 1m	0.79
Vertical Ball Rebound | Initial | Wet (Quality)	0.6 - 1m	0.62
Vertical Ball Rebound | after simulated wear | 6'000 cycles (5*)	0.6 - 1m	1.00
Vertical Ball Rebound | after simulated wear | 6'000 cycles (20*)	0.6 - 1m	
Angle Ball Rebound | Dry	45 - 80 %	54
Angle Ball Rebound | Wet	45 - 80 %	73
Reduced Ball Roll | Initial | Dry (Quality)	4 - 10 m	6.1
Reduced Ball Roll | after simulated wear | 6'000 cycles (5*) | Dry	4 - 12 m	10.3
Reduced Ball Roll | after simulated wear | 6'000 cycles (5*) | Wet	4 - 12 m	10.5
Reduced Ball Roll | after simulated wear | 6'000 cycles (20*)| Dry	4 - 12 m	

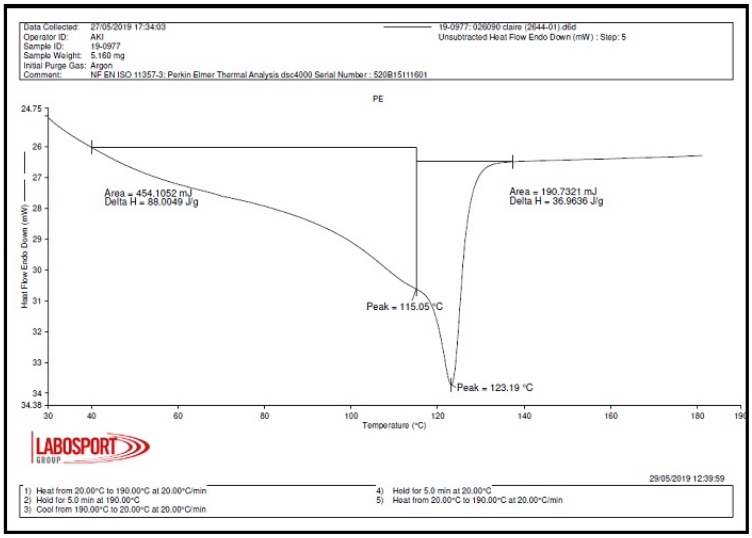
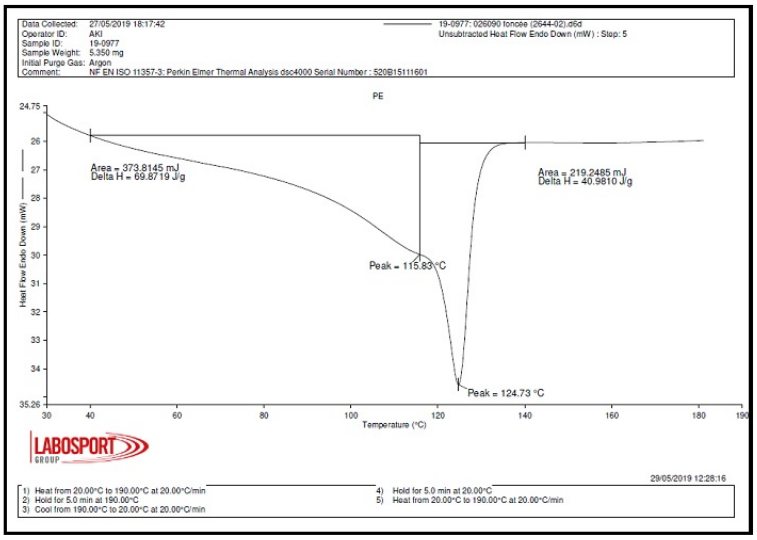
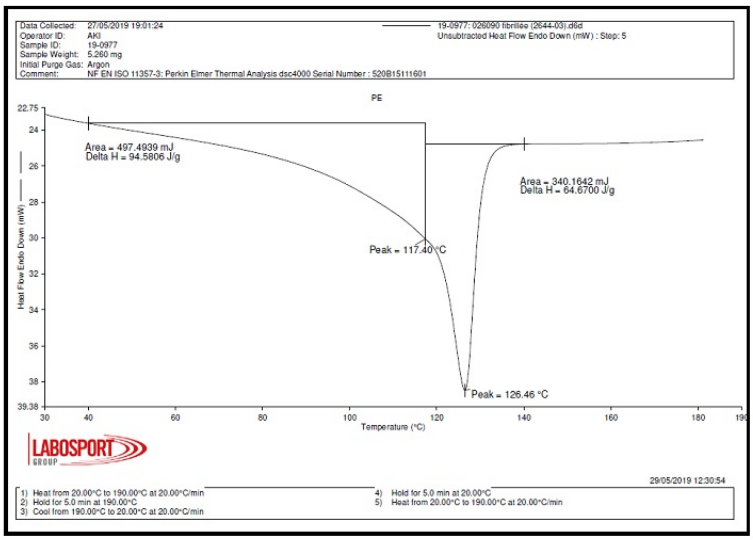
Name	Comment	Result
Reduced Ball Roll | after simulated wear | 6'000 cycles (20*)| Wet	4 - 12 m	
Shock absorption | Initial | Dry (Quality)	57 - 68 %	60.3
Shock absorption | Initial | Wet (Quality)	57 - 68 %	60.5
Shock absorption | after simulated wear | 6'000 cycles (5*)	57 - 68 %	56.6
Shock absorption | after simulated wear | 6'000 cycles (20*)	57 - 68 %	
Shock absorption | 50°C	57 - 68 %	59.80
Shock absorption | -5°C	57 - 68 %	58.10
Deformation | Initial | Dry (Quality)	6 - 11 m	9.0
Deformation | Initial | Wet (Quality)	6 - 11 m	9.0
Deformation | after simulated wear | 6'000 cycles (5*)	6 - 11 m	7.5
Deformation | after simulated wear | 6'000 cycles (20*)	6 - 11 m	
Rotational Resistance | Initial | Dry (Quality)	27 - 48 Nm	42
Rotational Resistance | Initial | Wet (Quality)	27 - 48 Nm	37
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	
Other, detail		
5 – Test Results | Player / Surface interaction		
Skin / surface friction | Dry	0.35 - 0.75 µ	0.75
Skin / surface friction | Dry | 3'000 cycles	0.35 - 0.75 µ	

Name	Comment	Result
Skin / surface friction | Dry | 6'000 cycles	0.35 - 0.75 µ	0.64
Skin abrasion | Dry	± 30 %	9
Skin abrasion | Dry | 3'000 cycles	± 30 %	
Skin abrasion | Dry | 6'000 cycles	± 30 %	18
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	4-5
Pile yarn 3 | Colour change | after artificial weathering	≥ Grey scale 3	4-5
Pile yarn 1 | Yarn tensile strength | after artificial weathering	Change ≤ 50 %	18
Pile yarn 2 | Yarn tensile strength | after artificial weathering	Change ≤ 50 %	29
Pile yarn 3 | Yarn tensile strength | after artificial weathering	Change ≤ 50 %	11
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	0
Stitched joints | Strength | un-aged	≥ 1000N/100mm	
Stitched joints | Strength | water aged	≥ 1000N/100mm	
Bonded joints | Strength | un-aged	≥ 75/100mm	120
Bonded joints | Strength | water aged	≥ 75/100mm	98

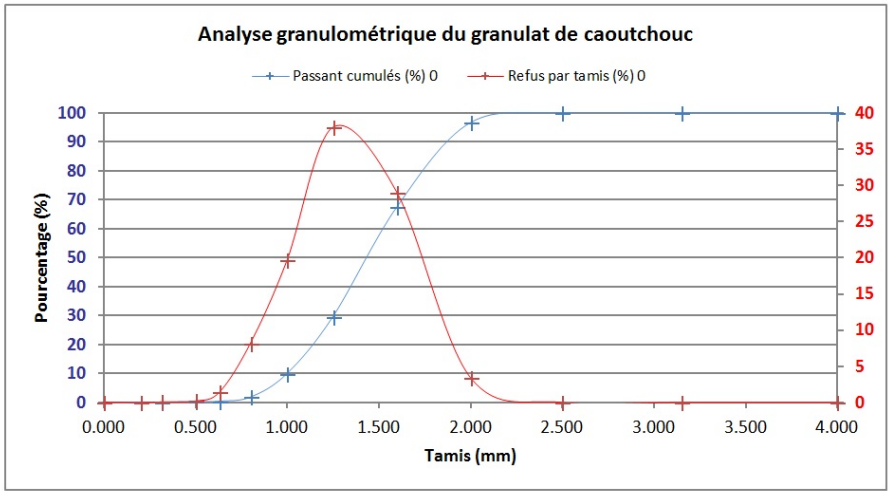
Name	Comment	Result
Carpet tuft | Withdrawal force | un-aged	≥ 30N	52
Carpet tuft | Withdrawal force | water aged	≥ 30N	52
Heat | Category	for information	
Splash | Characteristics	for information	
7 - Miscellaneous (shock pad, sub-base - if part of the system)		
Shock Pad / E-layer | tensile strength | un-aged	≥ 0.15 MPa	2.10
Sub-base | Composition		
Sub-base | Particle size range		
Sub-base | Particle shape		
Sub-base | Thickness		
Sub-base | Compaction & test method		
Other, detail		The shockpad is not a permeable shockpad, the water permeability of the complete system is not applicable in this case. UVA results are issued from SportsLabs reports and have not been verified: n°17609/1719 - Venus Emerald Green + n°17609/1720 - Venus Lime Green + n°17612/1690 - YEII Emerald Green

2 – Test Images

DSC Diff. Scan. Colorimetry scans of pile yarn

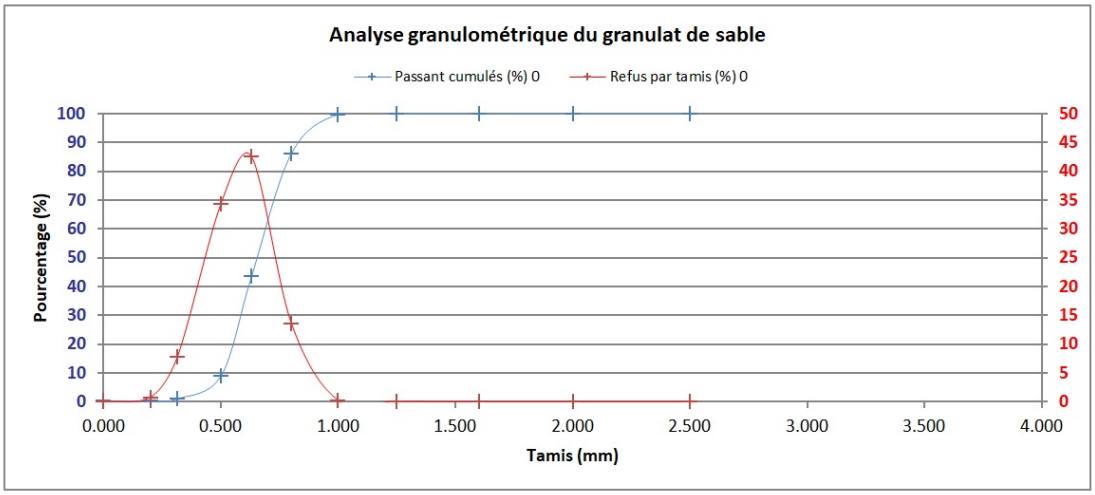
Light yarn	
Dark yarn	
Tape Yarn	

Performance infill particle grading curve



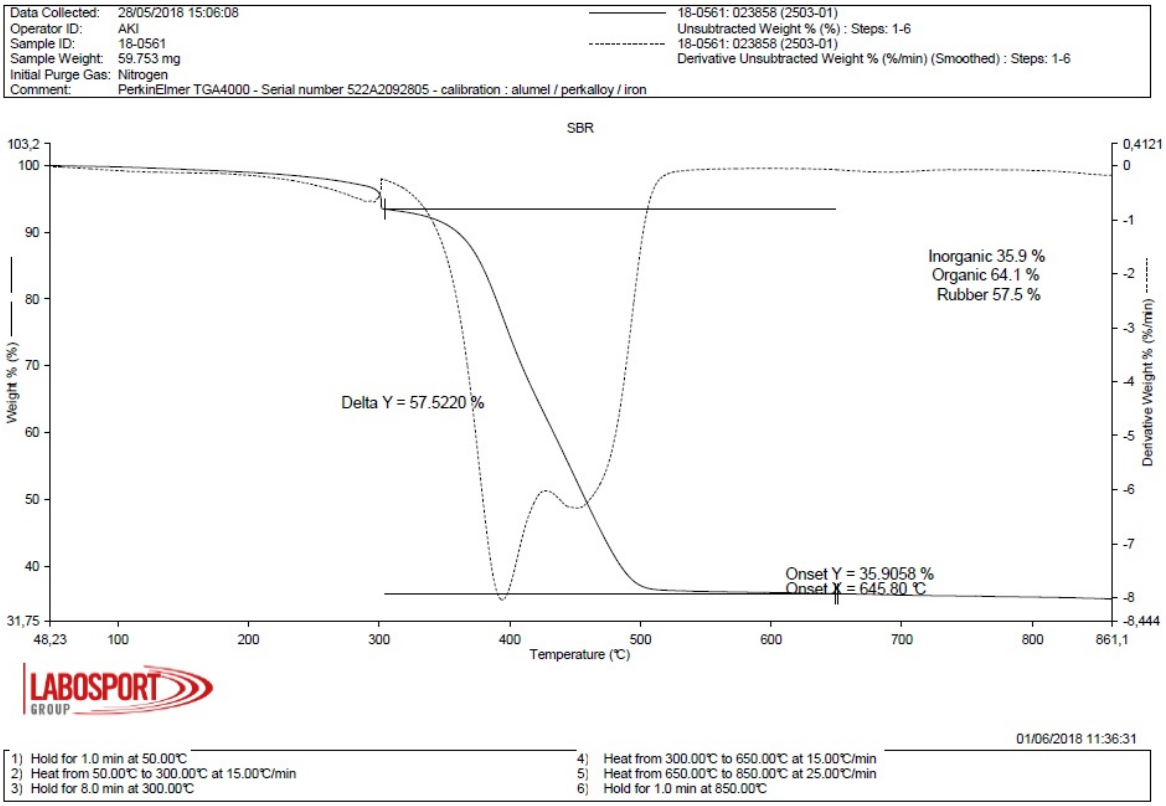
Ouverture des tamis (mm)	0.000	0.200	0.315	0.500	0.630	0.800	1.000	1.250	1.600	2.000	2.500	3.150	4.000
Refus par tamis (%)	0	0	0	0	1	8	20	38	29	3	0	0	0
Passant cumulés (%)	0	0	0	0	0	2	10	30	68	97	100	100	100

Stabilising infill particle grading curve

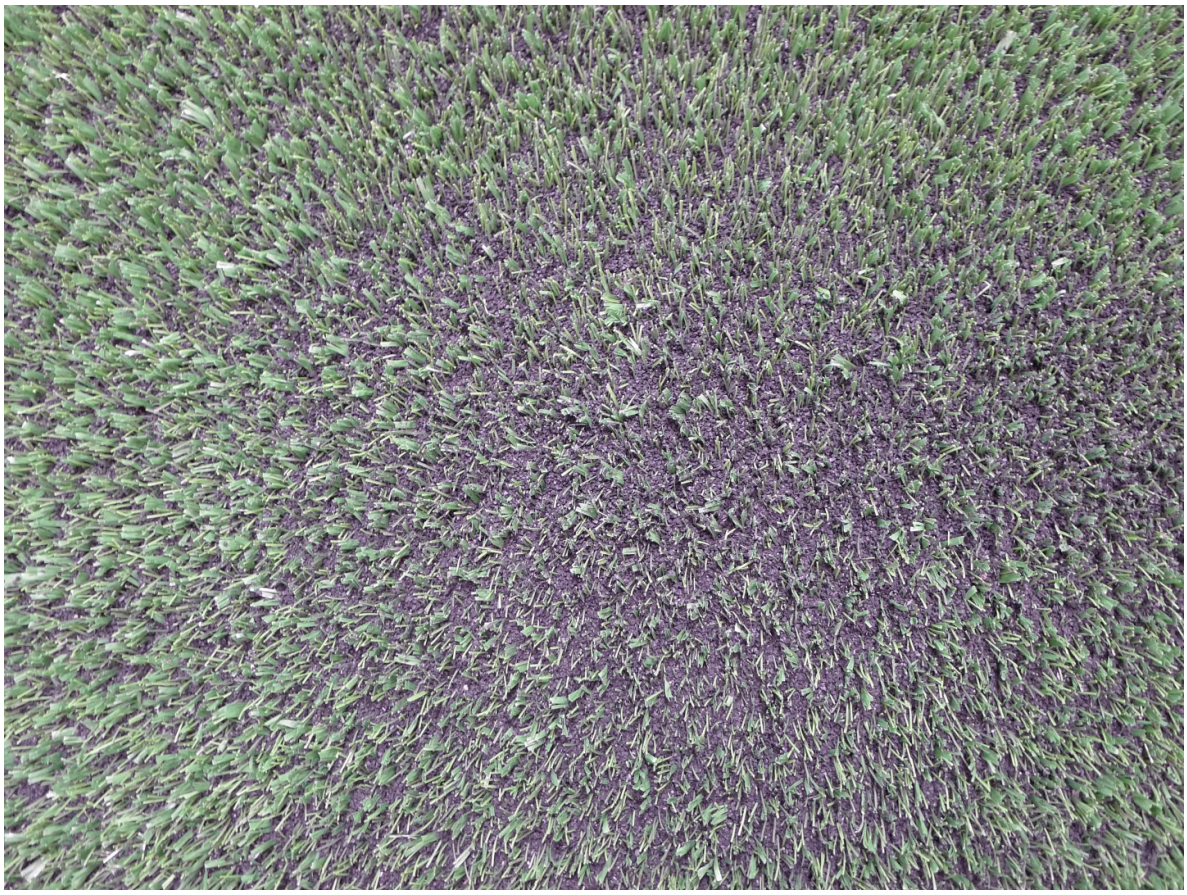


Ouverture des tamis (mm)	0.000	0.200	0.315	0.500	0.630	0.800	1.000	1.250	1.600	2.000	2.500
Refus par tamis (%)	0.00	0.81	7.90	34.42	42.55	13.59	0.22	0.07	0.00	0.00	0.00
Passant cumulés (%)	0	0	1	9	44	86	100	100	100	100	100

TGA of performance infill



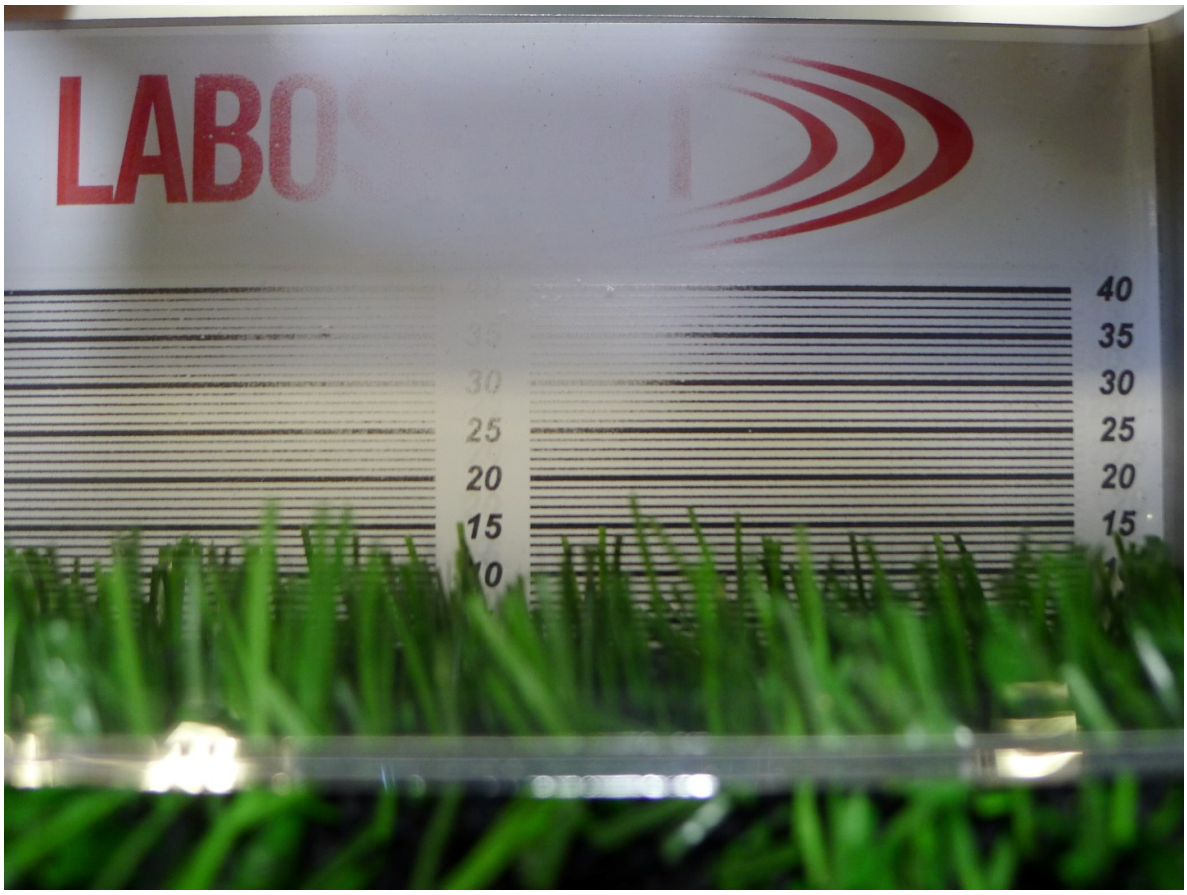
Simulated wear - Before 1



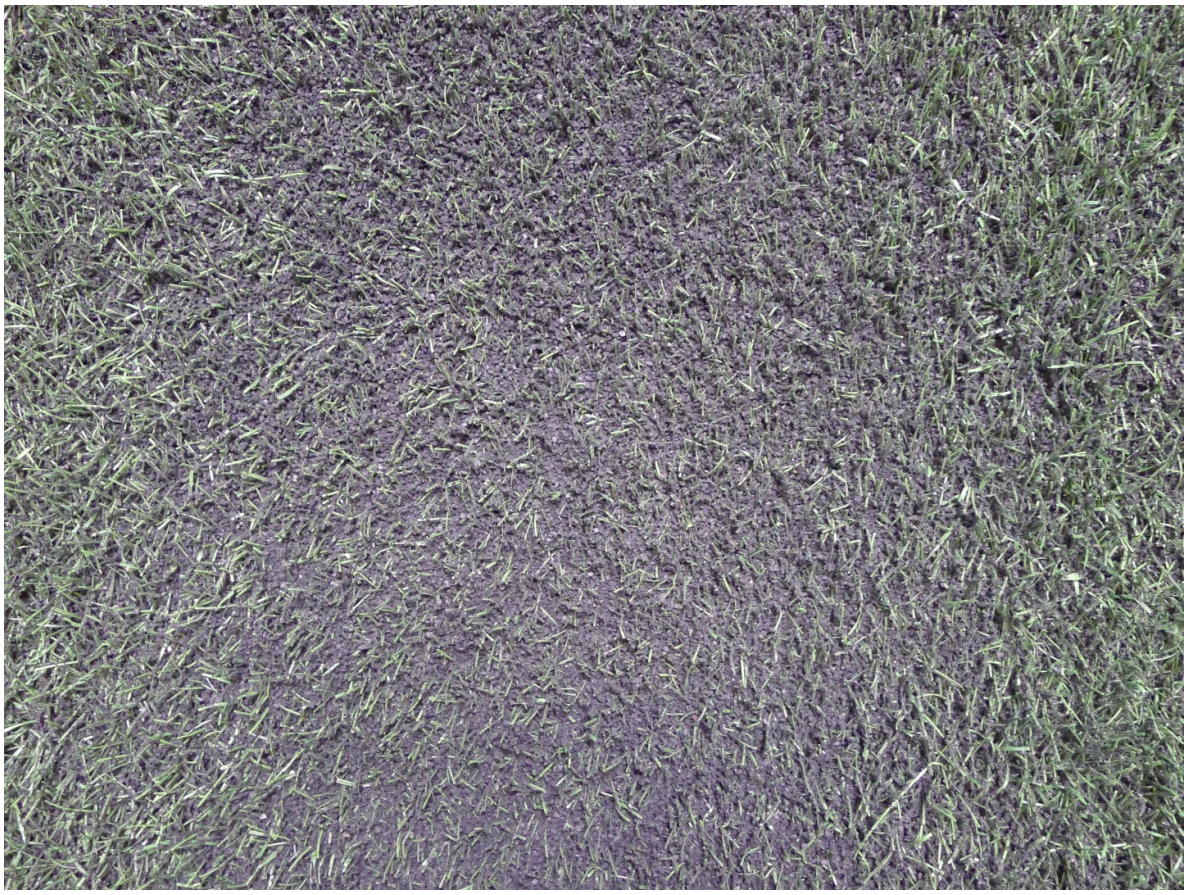
Simulated wear - Before 2

Simulated wear - Before 3

Simulated wear - Before 4



Simulated wear - After 1

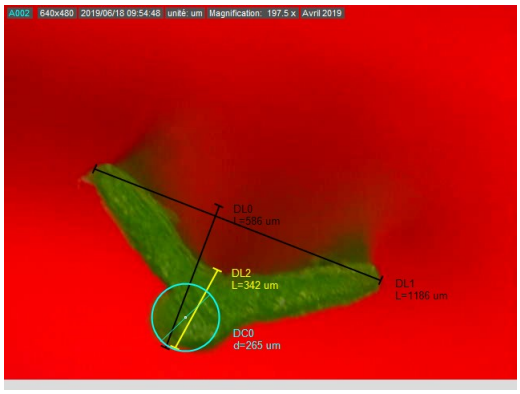


Simulated wear - After 2

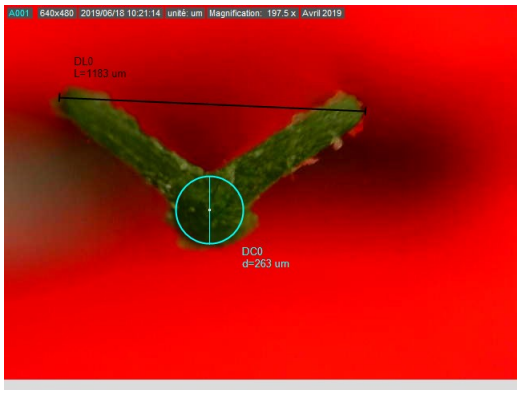
Simulated wear - After 3

Simulated wear - After 4

Yarn Characteristics - 1

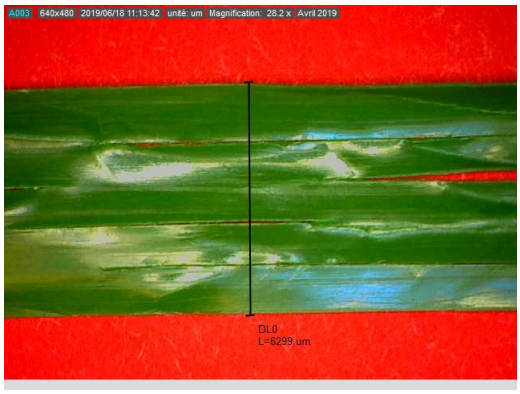


Yarn Characteristics - 2



Yarn Characteristics - 3

Yarn Characteristics - 4



Stabilising Infill - picture

Performance Infill - picture