



RUGBY TURF PRODUCT TEST REPORT FOR REGULATION 22

Atomic Pro 60

Tigerturf

Tested by



Manufacturer



TigerTurf™

Test details

Test	
Test date	15/02/2017
Technician Name	Sean Ramsay
Report Date	14/02/2017
Base Type	Concrete

Product	
Manufacturer Name	Tigerturf
Carpet Name	Atomic Pro 60
Pile Height	60
Shockpad Name	20mm E-Layer
Product Name	Atomic Pro 60

Infill		
Material	Supplier	Application Rate (kg/m3)
Silica Sand	Garside	28
SBR	Murfits	12

Shockpad	
Manufacturer Name	
Shockpad Name	20mm E-Layer
Thickness	20
Mass per unit area (kg / m2)	13

Accredited Test Institute	
Institute Name	Sports Labs
Institute Director	Richard Nixon
ATI Reference Number	17820/4703
Contact Details	info@sportslabs.co.uk / +44 845 602 6354

Tigerturf Atomic Pro 60 has been found to satisfy the product test requirements of World Rugby Regulation 22, the Performance Specification for Rugby Turf (2016 Performance Specification) and the World Rugby Laws of the Game – Law 1 for use on Outdoor and Indoor venues.

Performance Testing

Shock Absorption (%)				
Requirement	57% - 68%			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	65%	66%	64%	Pass
Preconditioned – Wet	65%	67%	64%	Pass
After simulated wear	61%	63%	58%	Pass
@ -5°C	62%			Pass
@ +50°C	65%			Pass

Vertical Deformation (mm)				
Requirement	6mm - 10mm			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	9.65	9.90	9.40	Pass
Preconditioned – Wet	9.78	10.00	9.50	Pass
After simulated wear	8.62	9.05	8.15	Pass
@ -5°C	9.40			Pass
@ +50°C	9.75			Pass

Energy Restitution (%)				
Requirement	22% - 48%			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	39%	40%	38%	Pass
Preconditioned – Wet	38%	40%	37%	Pass
After simulated wear	42%	43%	41%	Pass
@ -5°C	41%			Pass
@ +50°C	36%			Pass

Vertical Ball Rebound (m)				
Requirement	0.6m - 1m			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	0.84			Pass
Preconditioned – Wet	0.82			Pass
After simulated wear	94%			Pass

Angled Ball Rebound (%)				
Requirement	45% - 80%			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	48%			Pass
Preconditioned – Wet	66%			Pass

Rotational Resistance (Nm)				
Requirement	32Nm - 43Nm			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	36.20			Pass
Preconditioned – Wet	37.60			Pass
After simulated wear	41.00			Pass

Impact Attenuation (m)				
Requirement	≥1.3m (Single drop ≤1,000 HIC)			
Test	Result	Max	Min	Test Status
Preconditioned – Dry	1.30			Pass
Preconditioned – Wet	1.30			Pass
After simulated wear	1.30			Pass
@ -5°C	947.00			Pass
@ +50°C	831.00			Pass

Ratings	
Test	Result
Splash	Normal
Heat	2

Identification Tests

Rugby Turf - Carpet				
Test	Result	Declaration	Permitted Variance	Test Status
Pile length (mm)	60	60	≥ 60 m	Pass
Mass per unit area (kg/m ²)	2,258	2,381	$\pm 10\%$	Pass
Tufts/Knots per unit area (m ⁻²)	8,127	8,320	$\pm 10\%$	Pass
Tuft withdrawal force (N)	54	30	$\geq 90\%$	Pass
Total pile weight (kg/m ²)	1,404	1,559	$\pm 10\%$	Pass
Water permeability (mm/hr)	1,143	-	≥ 500 mm/hr	Pass



Pre-wear carpet



Post-wear carpet



Pre-wear closeup



Post-wear closeup



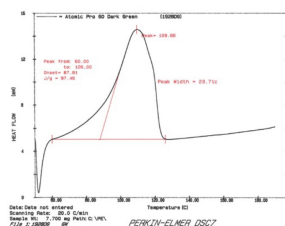
Pre-wear yarn closeup



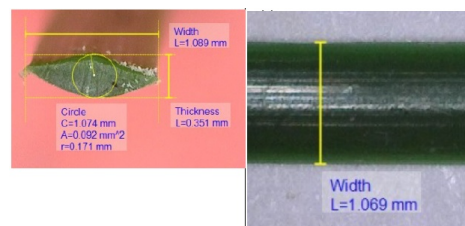
Post-wear yarn closeup

Yarn 01 - FG - Diamond

Test	Result	Declaration	Permitted Variance	Test Status
Thickness – Cross Section (nm)	351	365	≥ 90%	Pass
Thickness – Width (mm)	1.1	1.05	≥ 90%	Pass
Thickness - Depth (mm)	342	365	≥ 90%	Pass
dTex (dTex)	6,761	6,600	± 10%	Pass
DSC - Peak 01 (°C)	109.66	110	± 3°C	Pass
DSC - Peak 02 (°C)	0	0	± 3°C	N/a



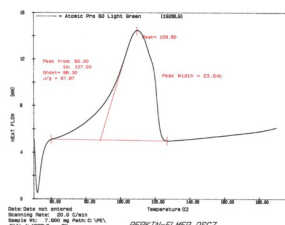
Yarn 1 DSC



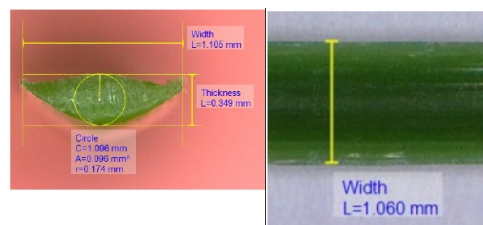
Yarn 1 cross section

Yarn 02 - Lime - Diamond

Test	Result	Declaration	Permitted Variance	Test Status
Thickness – Cross Section (nm)	349	365	≥ 90%	Pass
Thickness – Width (mm)	1.1	1.05	≥ 90%	Pass
Thickness - Depth (mm)	348	365	≥ 90%	Pass
dTex (dTex)	6,530	6,600	± 10%	Pass
DSC - Peak 01 (°C)	109.8	110	± 3°C	Pass
DSC - Peak 02 (°C)	0	0	± 3°C	N/a



Yarn 2 DSC

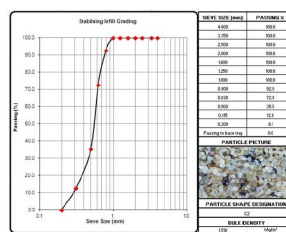


Yarn 2 cross section

Infill 01 - Silica Sand - sand - Stabilising				
Test	Result	Declaration	Permitted Variance	Test Status
Shape	C2 - Round - Medium sphericity	C2 - Round - Medium sphericity	Same shape	Pass
Size	0.2 - 0.8	0.315 - 0.8	± 1 Sieve Size	Pass
Bulk Density	1.51	1.51	± 15%	Pass
% Organic	0	0	± 10%	N/a

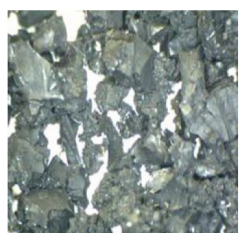


Infill 1

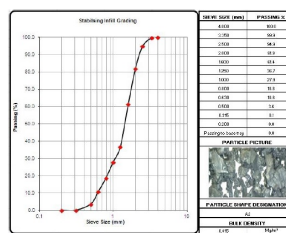


Infill 1 Grading

Infill 02 - SBR - Black - Performance				
Test	Result	Declaration	Permitted Variance	Test Status
Shape	A2 - Angular - Medium sphericity	A2 - Angular - Medium sphericity	Same shape	Pass
Size	0.63 - 2.5	0.8 - 2.5	± 1 Sieve Size	Pass
Bulk Density	0.42	0.45	± 15%	Pass
% Organic	0.64	0.64	± 10%	Pass



Infill 2



Infill 2 Grading

Shockpad				
Test	Result	Declaration	Permitted Variance	Test Status
Thickness	20	20	$\geq 90\%$	Pass
Shock Absorption	0.46	0.49	$\pm 5\%$	N/a
Deformation	4	5	$\pm 10\%$	N/a
Energy Restitution	0.71	-	-	N/a
Mass per unit area	13	13	$\pm 10\%$	Pass
Tensile strength	0.15	-	$\geq 0.15\text{Nm}$	Pass



Shockpad

Laboratory Tests

Skin Interaction Tests

Test	Result	Requirement	Test Status
Skin/Surface Friction	0.73	0.35 - 0.75 μ	Pass
Skin Abrasion	19%	$\pm$ 30%	Pass

Unaged Carpet Strength Tests

Test	Result	Requirement	Test Status
Parallel to Stitching	31	25 N/mm	Pass
Perpendicular to Stitching	30	25 N/mm	Pass

Unaged Joint Strength

Test	Result	Requirement	Test Status
Stitched	0	2500 N/100mm	N/a
Bonded	2,520	2500 N/100mm	Pass
Peel	78	25 N/mm	Pass

Aged Joint Strength

Test	Result	Requirement	Test Status
Stitched	0	2500 N/100mm	N/a
Bonded	2,609	2500 N/100mm	Pass
Peel	75	25 N/mm	Pass

Unaged Tensile Strength

Test	Result	Requirement	Test Status
Yarn 01	17	$\geq$ 8N (mono), $\geq$ 30 (fibb)	Pass
Yarn 02	16.6	$\geq$ 8N (mono), $\geq$ 30 (fibb)	Pass
Yarn 03	0	$\geq$ 8N (mono), $\geq$ 30 (fibb)	N/a

Aged Strength Tests

Test	Result	Requirement	Test Status
Yarn 01	17.1	>50% of unaged	Pass
Yarn 02	17	>50% of unaged	Pass
Yarn 03	0	>50% of unaged	N/a

Comments