

**WORLD
RUGBY™**

**RUGBY TURF FIELD TEST REPORT FOR
REGULATION 22**

Grasshoppers Rugby Club

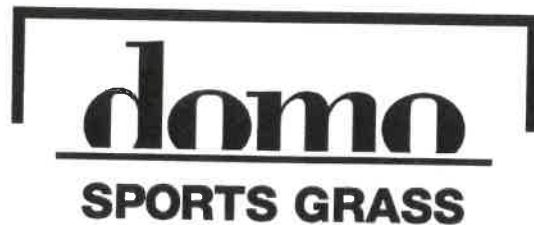
Main Pitch

Domo Sports Grass - Domo Duraforce XSL 60M-14,5

Tested by



Installed By



The field at
**Grasshoppers Rugby Club,
Main Pitch**

Tested by



Sports Labs

on

07/08/2018

complies with the requirements of World Rugby Regulation 22 Performance Specification
2016 Performance Specification

Compliance is valid until 07/08/2020.



Richard Nixon
Laboratory Director

Site Details

Venue	
Site Name	Grasshoppers Rugby Club
Site Address	Syon Lane, Middlesex, TW7 5PN
Union with Jurisdiction	ENGLAND - Rugby Football Union
Site Contact Name	Mark Swattan
Site Contact Email	mark.swatton@agripower.co.uk
Site Contact Telephone	
Venue Type	Outdoor
Field Type	Check Dimensions

Surface	
Manufacturer Name	Domo Sports Grass
Product Name	Domo Duraforce XSL 60M-14,5
Shockpad Name	Proplay 20
Pile height above backing (mm)	60

Installation	
Installation Completion Date	1 August, 2018
Contractor Name	Agripower



Field

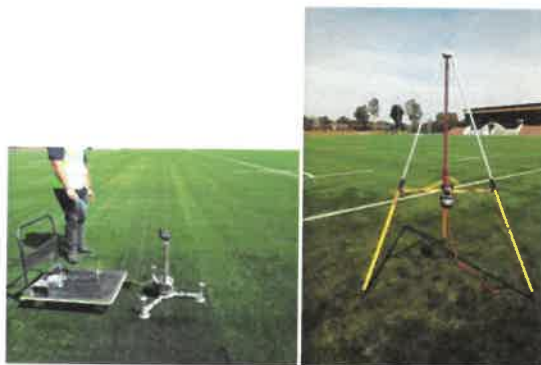
Test details

Information	
Test Date	07/08/2018
Applicable Performance Specification	2016 Performance Specification
Test Type	Initial
World Rugby Reference	PST1571

Accredited Test Institute	
ATI Name	Sports Labs
Accredited Technician Name	Connor Munro
Laboratory Director	Richard Nixon
Laboratory Contact Details	info@sportslabs.co.uk / +44 845 602 6354
ATI Reference	20783/1237s

Test Conditions		
Wind Speed (m/s)	0.1	
Surface Condition	Dry	
	Min	Max
Ambient Temperature (C)	25.3	28
Surface Temperature (C)	29.4	38.9
Relative Humidity (%)	49.00%	51.00%

At the time of testing the Rugby Turf field at Grasshoppers Rugby Club complies with the requirements of World Rugby Regulation 22 Performance Specification (2016 Performance Specification). This field will need to be retested to World Rugby Regulation 22 on or before 07/08/2020.

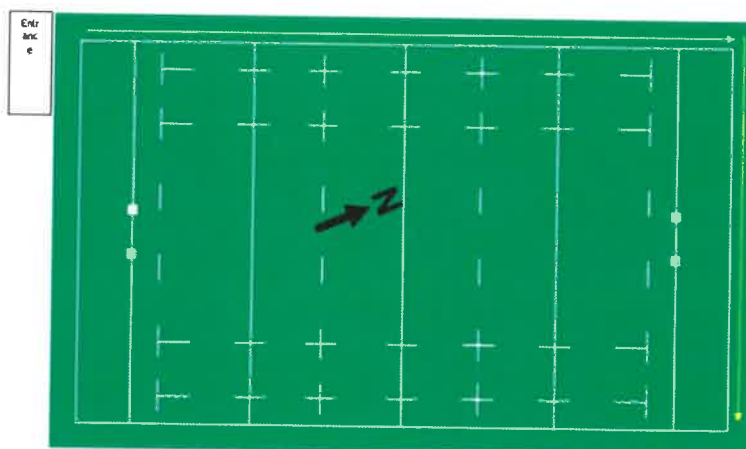


Test equipment on site

Playing Surface

Dimensions		
	Length (m)	Width (m)
Carpet entire area of surface	109.95	79.9
Field of Play	99.95	70
In Goal	8.1	
Field Type	Check Dimensions	
Risk Assessment Recommended	Risk assessment on run-offs behind the in-goals is advised	
The field of play must comply with Law 1 of the Laws of Rugby to be considered suitable for use for International Rugby matches		

Requirements			
Test	Test Result	Permitted Range	Test Status
Slope	0.30%	≤ 1%	Pass
Evenness	0	≤ 10mm	Pass



Areas where the evenness requirement exceeds the maximum permitted are indicated above. Raised areas are in black, low areas are in red. The slope is indicated with a yellow arrow, where applicable.

Performance Testing

The following performance tests are completed to assess the suitability of the surface for Rugby. These tests individually give an assessment of the different performance aspects related to player and ball interaction but should only be interpreted collectively. In addition to the limits set, there is also a need for consistency to be achieved across the field, this is determined by the variance (Δ Max = Maximum of |Max – Average| and |Average-Min|) of the max and min from the average reading.

Shock Absorption	
Test Explanation	Advanced Artificial Athlete – Impact of the surface with a 20kg mass with a spring designed to mimic the human body when running on the surface
Risk of high values	If the shock absorption is too high the surface will feel heavy to the player and will sap their energy tiring them out quicker
Risk of low values	If the shock absorption is too low the surface will feel too hard and result in player increased risk of injury from compaction of the meniscus in the knee joints and the spinal column
Permitted Range	55% - 70% ($\leq 5\%$)
Maximum Reading	70.00%
Minimum Reading	65.50%
Δ Max	3.03%
Test Status	Pass

Vertical Deformation	
Test Explanation	Advanced Artificial Athlete – Impact of the surface with a 20kg mass with a spring designed to mimic the human body
Risk of high values	A high vertical deformation means that the field will deform too much under the player which may result in overstretching of ligaments.
Risk of low values	A low vertical deformation means that the field does not have enough compressibility and will feel hard to run on.
Permitted Range	5.5mm - 11mm ($\leq 2\text{mm}$)
Maximum Reading	11.00mm
Minimum Reading	9.95mm
Δ Max	0.76mm
Test Status	Pass

Energy Restitution	
Test Explanation	Advanced Artificial Athlete – Impact of the surface with a 20kg mass with a spring designed to mimic the human body
Risk of high values	A high energy restitution value results in the field returning too much energy to the player. This can result in the feeling of a lack of control and can result in muscles and tendons being excessive muscle vibration.
Risk of low values	Low energy restitution value results in the player needing to expend more energy to move across the surface as the surface is absorbing the energy and not returning sufficient to the player. This will increase the fatigue of players and will potentially increase so-called overuse injuries.
Permitted Range	20% - 50% ($\leq 6\%$)
Maximum Reading	44.70%
Minimum Reading	40.25%
Δ Max	2.23%
Test Status	Pass

Vertical Ball Rebound	
Test Explanation	Drop a soccer ball from 2m height and record the rebound height
Risk of high values	If the vertical ball rebound is too high then the surface will make the ball bounce an unusually high amount.
Risk of low values	If the vertical ball rebound is too low the ball will bounce less than is expected resulting in a deadening of the ball.
Permitted Range	0.6m - 1m ($\leq 0.1\text{m}$)
Maximum Reading	0.66m
Minimum Reading	0.60m
Δ Max	0.04m
Test Status	Pass

Rotational Resistance	
Test Explanation	Using a torque wrench apply a rotational force to a studded plate on the surface with a 46kg mass applied.
Risk of high values	If the rotational resistance is too high, the natural slippage that is expected is reduced meaning that the likelihood of excessive grip between the boot and the surface increases the risk of potential joint (especially ankle and knee) injuries.
Risk of low values	If the rotational resistance is too low the player is more likely to slip and have less confidence in their foot holding. It makes change of direction much more difficult and slippage can result in over extension injuries.
Permitted Range	30Nm - 45Nm ($\leq 4\text{Nm}$)
Maximum Reading	32.00Nm
Minimum Reading	30.20Nm
Δ Max	1.04Nm
Test Status	Pass

Impact Attenuation	
Test Explanation	Drop a 4.6kg metal headform from a series of heights, calculate the HIC at each and estimate the height at which HIC is equal to 1,000.
Risk of high values	There is no real risk to having a high HIC, however to achieve higher values, the likelihood of other requirements not achieving their required levels is increased.
Risk of low values	If the HIC value is too low then the likelihood of serious injury occurring as a result of a player hitting their head on the surface is increased.
Permitted Range	≥ 1.3m (None)
Minimum Reading	1.50m
Δ Max	0.10m
Test Status	Pass

Please Note: These findings relate to the time of inspection only. The inspection does not constitute a formal site safety audit and is carried out as a requirement of World Rugby's Rugby Turf Performance Specification (2016 Performance Specification). The responsibility for the safety of the facility rests fully with the proprietor.



Maintenance equipment

Identification Tests

Identification tests are performed to ensure that the entire product which was tested in the laboratory is the same product that has been installed on the field. This is done because there are tests which can only be performed in the laboratory and it is important to ensure that the installed product is known to comply with these. The declaration referred to is the values provided by the manufacturer as part of their submission for testing.

Rugby Turf - Carpet				
Test	Result	Declaration	Permitted Variance	Test Status
Pile length (mm)	59	60	$\leq \pm 5\%$	Pass
Mass per unit area (kg/m ²)	2861	3105	$\leq \pm 10\%$	Pass
Tufts/Knots per unit area (m ⁻²)	9450	9135	$\leq \pm 10\%$	Pass
Tuft withdrawal force (N)	53.19	40	$\geq 90\%$	Pass
Total pile weight (kg/m ²)	1622	1750	$\leq \pm 10\%$	Pass
Water permeability (mm/hr)	5667	-	$\geq 500\text{mm/hr}$	Pass

Yarn 01 - bright green - Diamond				
Test	Result	Declaration	Permitted Variance	Test Status
Thickness – Cross Section (nm)	339	360	$\geq 90\%$	Pass
Thickness – Width (mm)	1.058	1.1	$\geq 90\%$	Pass
Thickness - Depth (mm)	339	0.362	$\geq 90\%$	Pass
dTex (dTex)	6470	6500	$\leq \pm 10\%$	Pass
DSC - Peak 01 (°C)	122.67	122.11	$\leq \pm 3^\circ\text{C}$	Pass
DSC - Peak 02 (°C)	113.19	114.5	$\leq \pm 3^\circ\text{C}$	Pass

Yarn 02 - sports green - Diamond				
Test	Result	Declaration	Permitted Variance	Test Status
Thickness – Cross Section (nm)	356	360	$\geq 90\%$	Pass
Thickness – Width (mm)	1.05	1.1	$\geq 90\%$	Pass
Thickness - Depth (mm)	356	0.364	$\geq 90\%$	Pass
dTex (dTex)	7087	6500	$\leq \pm 10\%$	Pass
DSC - Peak 01 (°C)	122.67	121.7	$\leq \pm 3^\circ\text{C}$	Pass
DSC - Peak 02 (°C)	113.59	111.44	$\leq \pm 3^\circ\text{C}$	Pass

Yarn 03 - 0 - 0				
Test	Result	Declaration	Permitted Variance	Test Status
Thickness – Cross Section (nm)	0	0	$\geq 90\%$	N/a
Thickness – Width (mm)	0	0	$\geq 90\%$	N/a
Thickness - Depth (mm)	0	0	$\geq 90\%$	N/a
dTex (dTex)	0	0	$\leq \pm 10\%$	N/a
DSC - Peak 01 (°C)	0	0	$\leq \pm 3^\circ\text{C}$	N/a
DSC - Peak 02 (°C)	0	0	$\leq \pm 3^\circ\text{C}$	N/a

Lines				
Line colour				???
If lines are present, are they the equivalent product as the remainder of the field				Yes
Test	Result	Declaration	Permitted Variance	Test Status
Yarn 01 – Thickness (nm)	339	360	≥ 90%	Pass
Yarn 02 – Thickness (nm)	356	360	≥ 90%	Pass
Yarn 03 – Thickness (nm)	0	0	≥ 90%	N/a
DSC - Yarn 01 - Peak 01 (°C)	0	122.11	≤± 3° C	N/a
DSC - Yarn 01 - Peak 02 (°C)	0	114.5	≤± 3° C	N/a
DSC - Yarn 02 - Peak 01 (°C)	0	121.7	≤± 3° C	N/a
DSC - Yarn 02 - Peak 02 (°C)	0	0	≤± 3° C	N/a
DSC - Yarn 03 - Peak 01 (°C)	0	0	≤± 3° C	N/a
DSC - Yarn 03 - Peak 02 (°C)	0	0	≤± 3° C	N/a

Infill 01 - Silica Sand - Stabilising				
Test	Result	Declaration	Permitted Variance	Test Status
Shape	A2 - Angular - Medium sphericity	C2 - Round - Medium sphericity	Same shape	Pass
Size	0.2 - 0.5	0.2 - 0.63	≤± 1 Sieve Size	Pass
Bulk Density	1523	1500	≤± 15%	Pass

Infill 02 - SBR - Performance				
Test	Result	Declaration	Permitted Variance	Test Status
Shape	A2 - Angular - Medium sphericity	A2 - Angular - Medium sphericity	Same shape	Pass
Size	0.8 - 2	0.8 - 2	≤± 1 Sieve Size	Pass
Bulk Density	409	430	≤± 15%	Pass



Pile Height

Visual Inspections

Details of the items identified are contained in the comments section.

Visual Inspection	Result	Photo
Seam Joint Failures	No Issues	
Glue Lumps	No Issues	
Colour variations	No Issues	
Looped yarn/pile	No Issues	
Tear repairs	No Issues	
Incorrect stitch orientation	No Issues	
Uneven infill	No Issues	
Exposed irrigation heads	No Issues	
Exposed access covers	No Issues	
Exposed goal and flag sockets	No Issues	
Goals are not fully upright	No Issues	
Goals/ goal sockets are in incorrect locations	No Issues	
Dangerous goal or flag structures	No Issues	
Line markings - Not straight	No Issues	
Line markings - Not correct	No Issues	
Line markings - Colour issues	No Issues	
Line markings - Excessive fibrillation	No Issues	

Comments

Other Images



Along halfway line



Corner 2



Touchline and 22 (1)



Touchline and 22 (2)



Extra test locations



Field overview