Accredited test laboratory

TECHNICAL REPORT

Assessment of Desso iDNA60/ET25 in accordance with Rugby Football League Performance and Construction Standards for Synthetic Turf Pitches (2011 Edition)

Report Number **LSUK.11-0570**

Client
Desso Sports Systems
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Belgium

Date **30/01/2012**

This report contains 12 pages including 3 appendices

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SUMMARY

The synthetic turf sports surface has been tested in accordance with the laboratory test requirements of the Rugby Football League Performance and Construction Standards for Synthetic Turf Pitches (2011 Edition). This report details the results obtained and compares them to the requirements of the regulation.

REPORT COPIES TO:

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1. PRODUCT DESCRIPTION

Surface Name	Desso iDNA60/ET 25
Product Code	Desso iDNA60/ET 25

Artificial grass	
Carpet name/code	Desso iDNA60/ET 25
Pile height (mm)	60mm
Pile yarn	iDNA
Pile yarn manufacturer	Desso Sports Systems

Infill		
Infill Material		Supplier
Rubber	SBR	Murfitts
Sand	2EW Silica sand	Garside Sands
Layer	Infill	Application rate kg/m^2
Upper	SBR	7.5
Lower	Sand	30
Approximate total infill depth (mm)		40

Shockpad	
Name	ET25
Composition	PU bound stone and rubber granules 14% binder content
Thickness (mm)	25mm

2. TEST PROGRAMME

The synthetic turf surface was tested in accordance with the laboratory assessment requirements of the Rugby Football League Performance and Construction Standards for Synthetic Turf Pitches (2011 Edition).

For the purposes of the test programme the synthetic turf system was laid on a concrete test bed.

Prior to testing the samples were prepared in accordance with the manufacturers' instructions and conditioned as required by the RFL test specifications.

The effects of simulated wear were measured after 20,200 cycles on a Lisport® machine.

3. RESULTS

The results of the test programme are detailed in Appendix A.

4. CONCLUSIONS

Desso iDNA60/ET 25 has been found to satisfy the laboratory test requirements of the Rugby Football League Performance and Construction Standards for Synthetic Turf Pitches (2011 Edition).

APPENDIX A FULL RESULTS

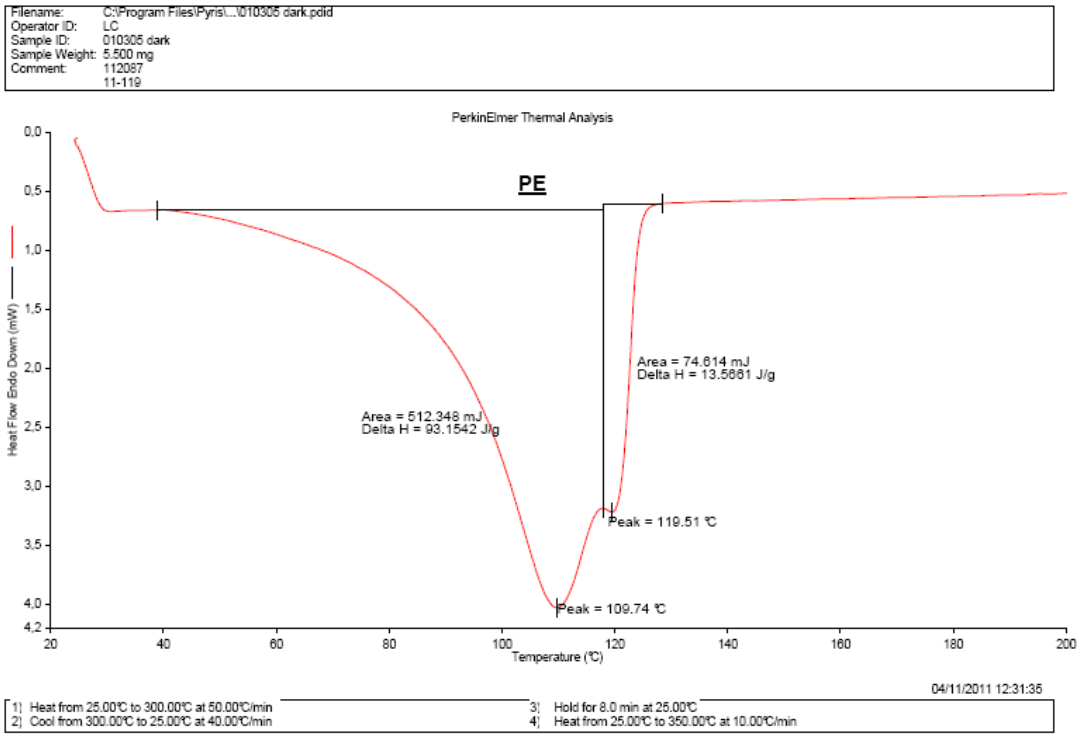
Property	Test method	Test condition	Units	Requirements		Mean result	Pass/ fail
				Stadium use surfaces	Community use surfaces		
Head injury criteria	BS EN 1177	Dry	m	≥ 1.3		**1.3**	Pass
		Wet	m			**1.3**	Pass
		Simulated wear	HIC	≤ 1000 @ 1.3m		**986**	Pass
Shock absorption	AAA	Pre-conditioning dry	%	50 - 65	50 - 70	**62**	Pass
		Pre-conditioning wet				**60**	Pass
		After simulated wear				**55**	Pass
		-5°C		≥ 50		**64**	Pass
		40°C		50 - 65	50 - 70	**55**	Pass
Vertical deformation	AAA	Pre-conditioning dry	mm	3.0 - 8.5	≤ 11.0	**8.5**	Pass
		Pre-conditioning wet				**7.5**	Pass
		After simulated wear				**6.5**	Pass
Energy restitution (target range non-mandatory)	AAA	Pre-conditioning dry	%	20 - 40	20 - 50	**41**	Pass
		Pre-conditioning wet				**44**	Pass
		After simulated wear				**48**	Pass
Rotational resistance – studded sole	BS EN 15301-1	Dry	Nm	35 - 50	25 - 55	**39**	Pass
		Wet				**41**	Pass
		After simulated wear				**45**	Pass
Rotational resistance – dimpled sole	BS EN 15301-1	Dry	Nm	-	25 - 50	**27**	Pass
		Wet				**30**	Pass
		After simulated wear				**36**	Pass
Skin / surface friction	RFL 01	Dry	μ	≤ 0.75		**0.72**	Pass
Skin abrasion	RFL 01	Dry	%	≤ 30		**-21**	Pass
Ball Rebound	BS EN 12335	Dry	m	0.80 - 1.10	0.60 - 1.10	**0.76**	Pass
		Wet				**0.81**	Pass
		Simulated wear				**0.85**	Pass
Water permeability	BS EN 12228	Simulated wear	mm/h	≥ 300		**2,291**	Pass

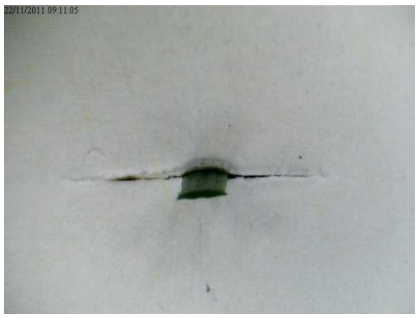
Property	Test method	Test condition	Units	Requirements	Mean result		Pass / fail
Joint strength	BS EN 12616 Method A	Unaged	N/100mm	≥ 2500	**2,753**		Pass
		After water ageing			**2,597**		Pass
	BS EN 12616 Method B	Unaged		≥ 50	**108**		Pass
		After water ageing			**92**		Pass
Resistance to tuft withdrawal	BS ISO 4919	Unaged	N	≥ 40	**49**		Pass
		After water ageing			**44**		Pass
Tensile strength of carpet	BS ISO 13934-1	Unaged	N	Mean ≥ 25 Min. in any direction 15	**29**		Pass
		After water ageing			**26**		Pass
Tensile strength of pile yarn	BS EN 13864	Unaged	N	≥ 30 (Fib)	**-**	**-**	-
				≥ 8 (Mono)	**128.8**	**128.8**	Pass
Tensile strength of shockpads	BS EN 12230	Unaged	MPa	≥ 0.15	**0.25**		Pass
		After air ageing			**0.20**		Pass
Shock absorption of shockpad	AAA	Unaged	%	Within ± 5% FR of manufacturer's declaration	**58**		Pass
		After air ageing		± 5% FR unaged result	**63**		Pass
Water permeability of shockpad	BS EN 12616	-	mm/h	≥ 300	**>3,000**		Pass
Infill splash	RFL 02	Unaged - Dry	-	≤ Category 3	**2**		Pass
Resistance to artificial weathering							
Pile yarn(s)							
Change in tensile strength	BS EN 13864	After UV exposure	%	≤ 50	**8.9**	**8.9**	Pass
Colour change	BS EN ISO 20105-A02	After UV exposure	Grey scale	≥ 3	**4/5**	**4/5**	Pass
Polymeric infill's							
Colour change	BS EN ISO 20105-A02	After UV exposure	Grey scale	≥ 3	**4/5**		Pass
Composition	Visual assessment	After UV exposure	-	No change	**No change**		Pass

APPENDIX B PRODUCT IDENTIFICATION

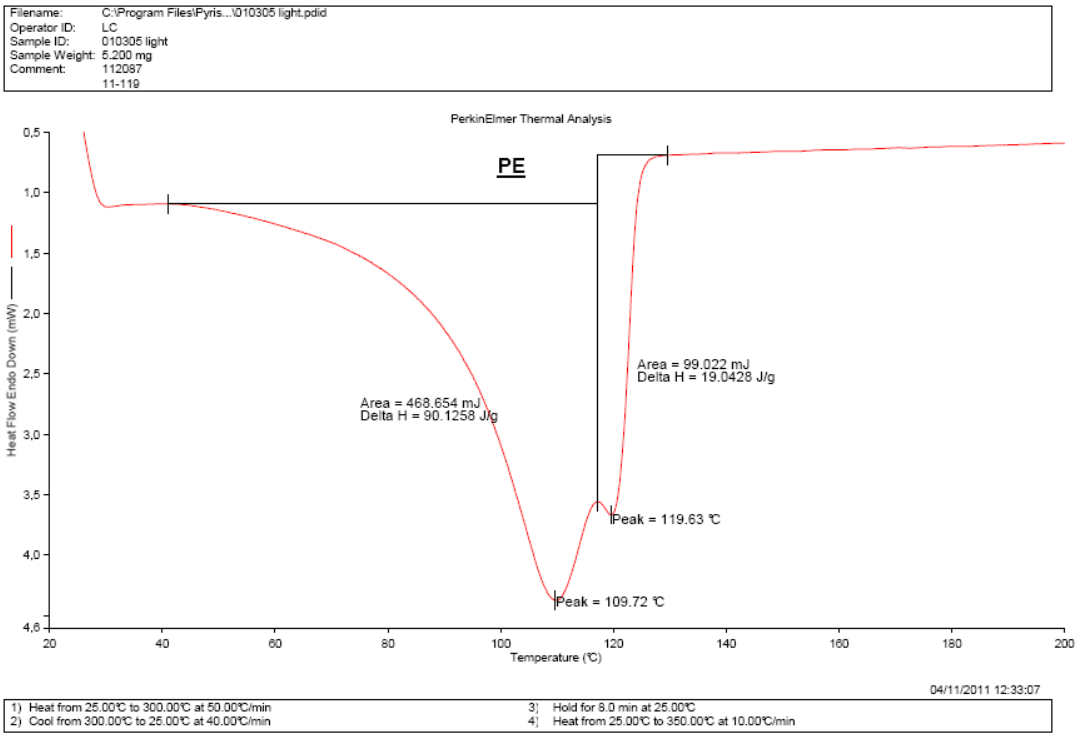
Component	Characteristic	Test method	Manufacture's declaration	Permitted variation / requirement	Finding		Pass / fail
Artificial turf	Mass per unit area	ISO 8543	3,285g/m^2	≤ ± 10 %	**3,547g/m^2**		Pass
	Tuft per unit area	ISO 1763	9,629/m^2	≤ ± 10 %	**9,449/m^2**		Pass
	Tuft withdrawal force	ISO 4919	30N	≥ 90 % of lab sample result	**49N**		Pass
	Pile length	ISO 2549	60mm	≤ ± 5 %	**60mm**		Pass
	Pile weight	ISO 8543	2,040g/m^2	≤ ± 10 %	**1,931g/m^2**		Pass
	Gauge	ISO 1763	¾"	Same gauge	**¾"**		Pass
	Pile yarn characterisation	ISO 11357-3	LLDPE	Same polymer	**PE**	**PE**	Pass
Shockpad or e-layer	Shock absorption	AAA	58%	≥ ± 5 %	**58%**		Pass
	Thickness	BS EN 1969	25mm	≥ 90 % of declaration	**25mm**		Pass
Performance infill	Particle grading	BS EN 933 - 1	0.5 – 2.0mm	≤	**0.5 – 2.0mm**		Pass
	Particle shape	BS EN 14955	Irregular	Similar shape	**Irregular B3**		Pass
	Bulk density	BS EN 1097-3	0.45g/cm^3	≤	**0.47g/cm^3**		Pass
	Thermo-gravimetric analysis	% organic	-	-	**66**		Pass
		% inorganic	-	-	**34**		Pass
Stabilising infill	Particle grading	BS EN 933 - 1	0.2 – 0.8mm	≤ ± 20 %	**0.315 – 0.630mm**		Pass
	Particle shape	BS EN 14955	80% round	Similar shape	**Sub-round C2**		Pass
	Bulk density	BS EN 1097-3	1.5g/cm^3	≤ ± 15 %	**1.5g/cm^3**		Pass

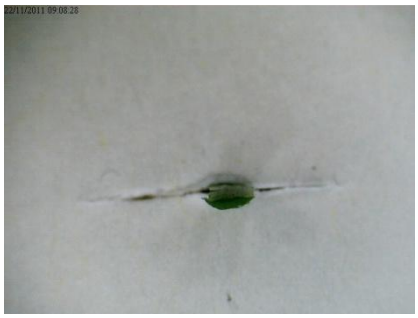
Graph 1: Pile yarn DSC Analysis – Dark fibre



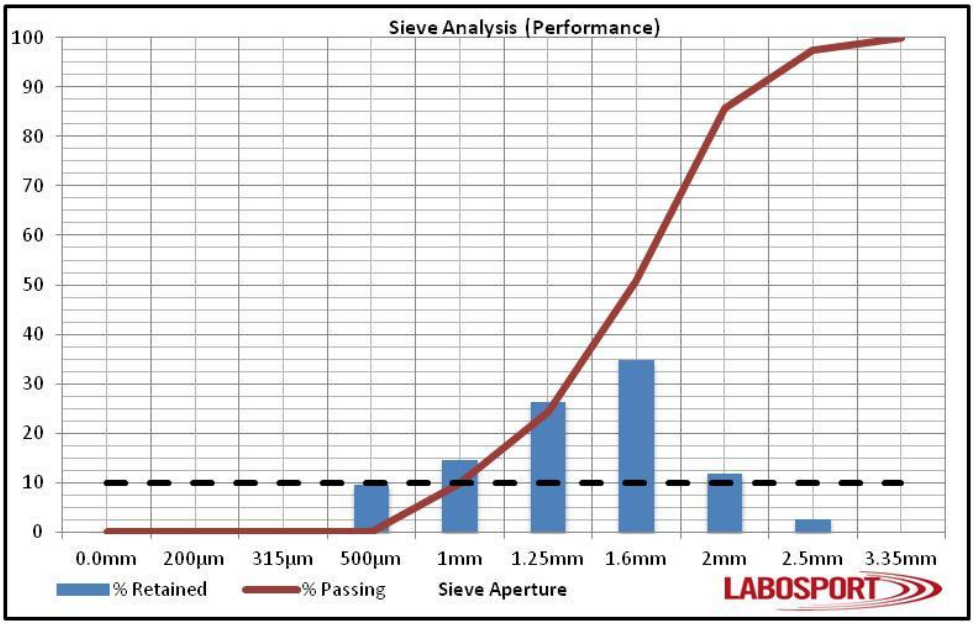
Pile profile	
Colour	Fieldgreen
RAL No.	6025
Calculated dtex	7496

Graph 1: Pile yarn DSC Analysis –Light fibre

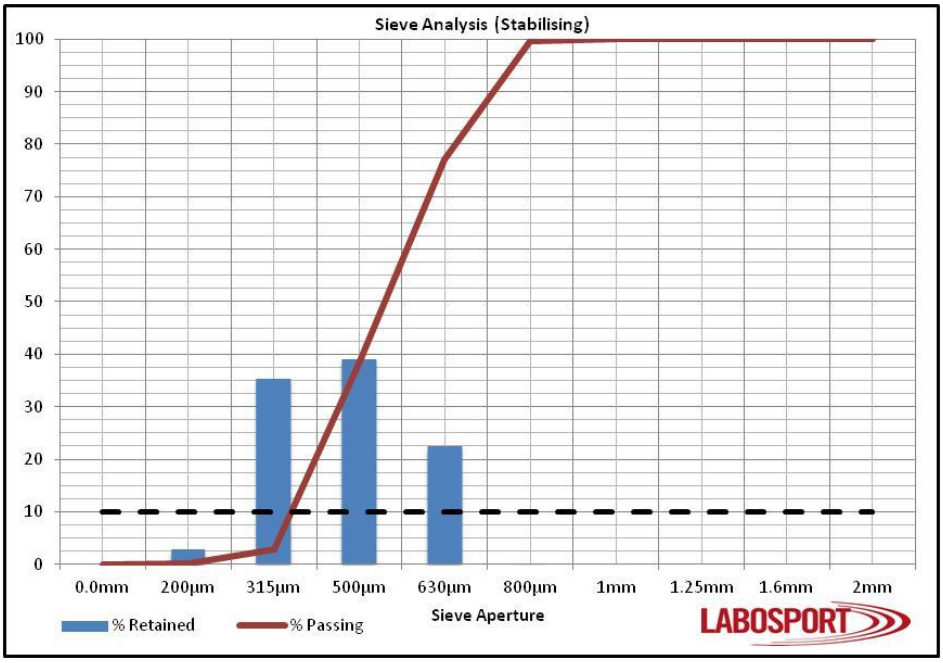


Pile profile	
Colour	Olive green
RAL No.	6003
Calculated dtex	7518

Graph 2: Particle Grading – Performance Infill

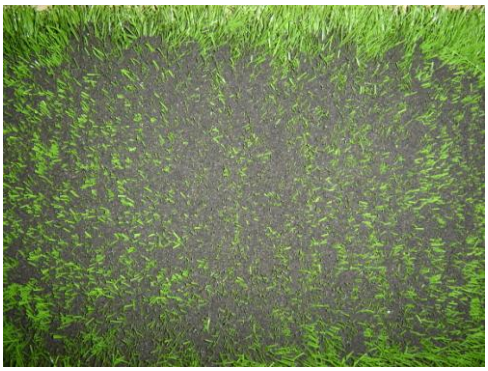
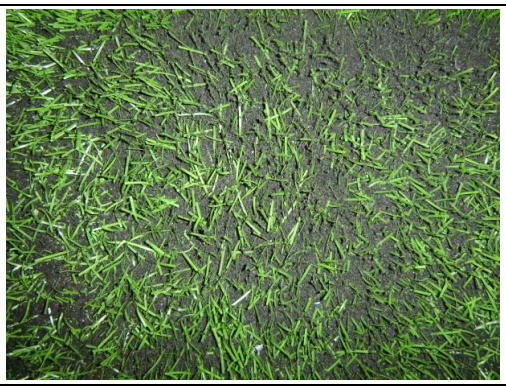
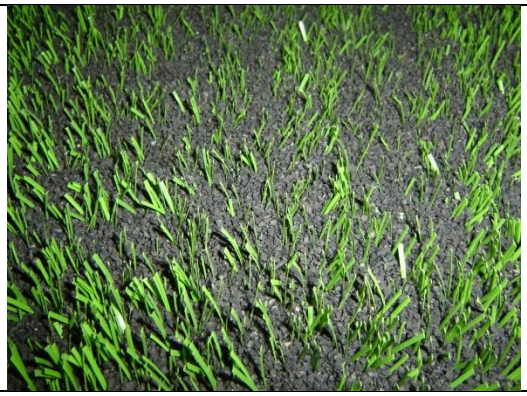


Graph 3: Particle Grading – Stabilising Infill



Shockpad composition

APPENDIX C SIMULATED WEAR PHOTOGRAPHS @ 20,200 LISPORT CYCLES

Before simulated wear	After simulated wear
General view	
	
Close-up of pile yarn	
	
Prism view