


RESEARCH REPORT - LABORATORY

PROJECT	:	Artificial turf "Edel Soccer Future DS 57 SB-S"
PURPOSE RESEARCH	:	Suitability for football according to standard EN 15330-1:2007
PRINCIPAL	:	Edel Grass B.V. Contact: Mr. V. Neuteboom
EXECUTION	:	ISA Sport Innovation & Quality Project Manager: Mr. J.G. Kieft 
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CONCLUSION

From the results of the laboratory research it is concluded that the artificial turf "Edel Soccer Future DS 57 SB-S" meets the requirements according to standard EN 15330-1:2007 for football surfaces.

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RESEARCH SUMMARY

Edel Grass B.V. requested ISA Sport to perform laboratory research on a football construction according to standard EN 15330-1:2007. The European standard specifies performance and durability characteristics for synthetic turf sport surfaces used primarily outdoors.

The following characteristics are determined under both dry and wet conditions:

- Vertical ball rebound;
- Ball roll;
- Shock absorption;
- Vertical deformation;
- Rotational resistance.

To Judge the durability of the construction, the surface is subjected to a tread simulation of 5.200 and 12.200 cycles. After both simulations the following characteristics are determined:

- Vertical ball rebound;
- Shock absorption;
- Rotational resistance.

The yarn sample is subjected to a climatic simulation, including Ultra Violet light, moisture and temperature changes during 3000 hours. Before and after 3000 hours of climatic simulation, the following characteristics are determined:

- Tensile strength yarn (according to standard NEN-EN 13864);
- Yarn colour (Lab coordinates and grey scale according to standard ISO 20105-A02).

All materials used in the construction are characterised.

The results of the research are described on the next pages.

1. Product description

Surface name	Edel Soccer Future DS 57 SB-S			
Carpet name	Edel Soccer Future DS 57			
Pile length (mm)	57 mm			
Infill layer(s)	Type	Application rate		Size (mm)
		(kg/m ²)	(mm)	
Performance infill	SBR	15	30	0.5 - 2.0
Stabilising infill	Sand	15	10	0.5 - 1.0
Shockpad	Name	Composition		Thickness (mm)
Shockpad or e-layer	N.A.	N.A.		N.A.
Base type	Concrete			

2. Test results sports functional characteristics and durability

Property	Test methods	Test condition	Result	Standard EN 15330-1	Conclusion
Colour fastness	EN 14836 EN 20105-A02	-	4 - 5	≥ 4	Pass
Tensile strength	EN 13864 EN 14836	-	6%	≤ 50%	Pass
Water permeability	EN 12616	-	3800	≥ 180 mm/h	Pass
Joint strength	EN 12228 EN 13744	Unaged	88 N / 100 mm	25 N / 100 mm	Pass
		Water aged	74 N / 100 mm		Pass
Vertical ball rebound	EN 12235 EN 15306	Dry	63%	45 - 75%	Pass
		wet	62%		Pass
		Tread simulation 5200 cycles	61%		Pass
		Tread simulation 12200 cycles	65%	N.A.	N.A.
Ball roll	EN 12234	Dry	6.1 m	4.0 - 10.0 m	Pass
		wet	6.7 m		Pass
Shock absorption	EN 14808 EN 15306	Dry	64%	55 - 70%	Pass
		wet	61%		Pass
		Tread simulation 5200 cycles	61%		Pass
		Tread simulation 12200 cycles	59%	N.A.	N.A.
Vertical deformation	EN 14809	Dry	7.9 mm	4.0 - 10.0 mm	Pass
		wet	7.6 mm		Pass
Rotational resistance	EN 15301-1 EN 15306	Dry	39 Nm	25 - 50 Nm	Pass
		wet	38 Nm		Pass
		Tread simulation 5200 cycles	41 Nm		Pass
		Tread simulation 12200 cycles	43 Nm	N.A.	N.A.

3. Test results characterisation materials

Property	Method	Result	Product declaration	Variation	Conclusion
Artificial turf					
Mass per unit area [kg/m ²]	ISO 8543	2.3	2.5	8%	Pass
Tufts per unit area [m ⁻²]	ISO 1763	8715	8820	1%	Pass
Pile length [mm]	ISO 2549	54	57	5%	Pass
Tuft withdrawal force [N]	ISO 4919	44 N	45 N	2%	Pass
Gauge rate [rows/m]	ISO 1763	63.9	N.A.	-	N.A.
Stitch rate [m ⁻¹]	ISO 1763	136.5	N.A.	-	N.A.
Fibre identification fibre 1 [°C]	ISO 11357-3				
	Onset peak 1	87.39	N.A.	-	N.A.
	Onset peak 2	131.16			
fibre 2 [°C]	ISO 11357-3				
	Onset peak 1	95.40	N.A.	-	N.A.
	Onset peak 2	131.68			
Shock absorbing layer					
Mass per unit area [kg/m ²]	EN 430	N.A.	N.A.	-	N.A.
Tensile strength [N]	EN 12230	N.A.	N.A.	-	N.A.
Thickness [mm]	EN 1969	N.A.	N.A.	-	N.A.
Performance infill					
Particle size [mm]	EN 933-1	0 - 2.0	0.5 - 2.0	none	Pass
Particle shape	EN 14955	irregular	irregular	none	Pass
Bulk density [kg/m ³]	EN 1097-3	467	500	7%	Pass
Stabilising infill					
Particle size [mm]	EN 933-1	0.355 - 1	0.5 - 1	<10%	Pass
Particle shape	EN 14955	rounded	rounded	None	Pass
Bulk density [kg/m ³]	EN 1097-3	1522	1600	5%	Pass

A tolerance of ± 10% for each property is acceptable.

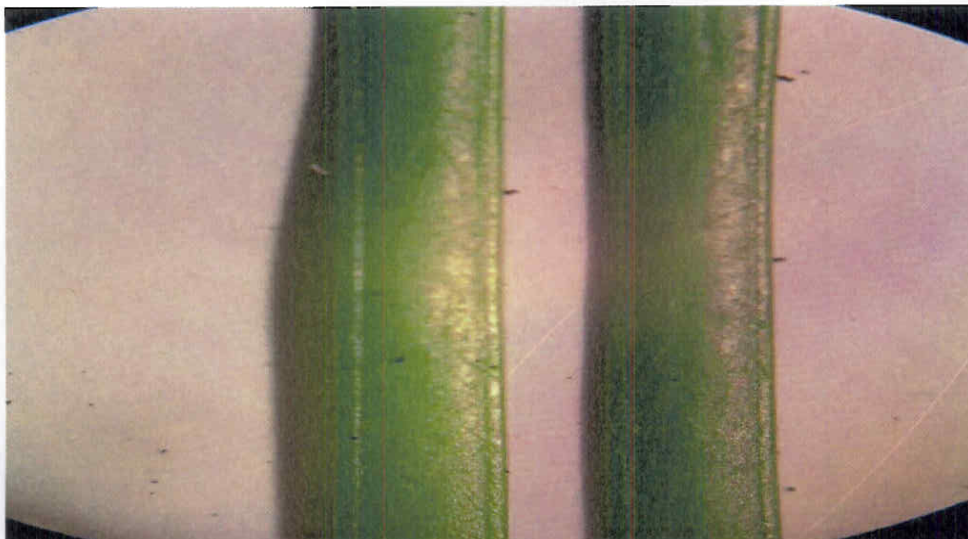


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APPENDIX I

PHOTO'S

Photographs showing the effects of simulated wear



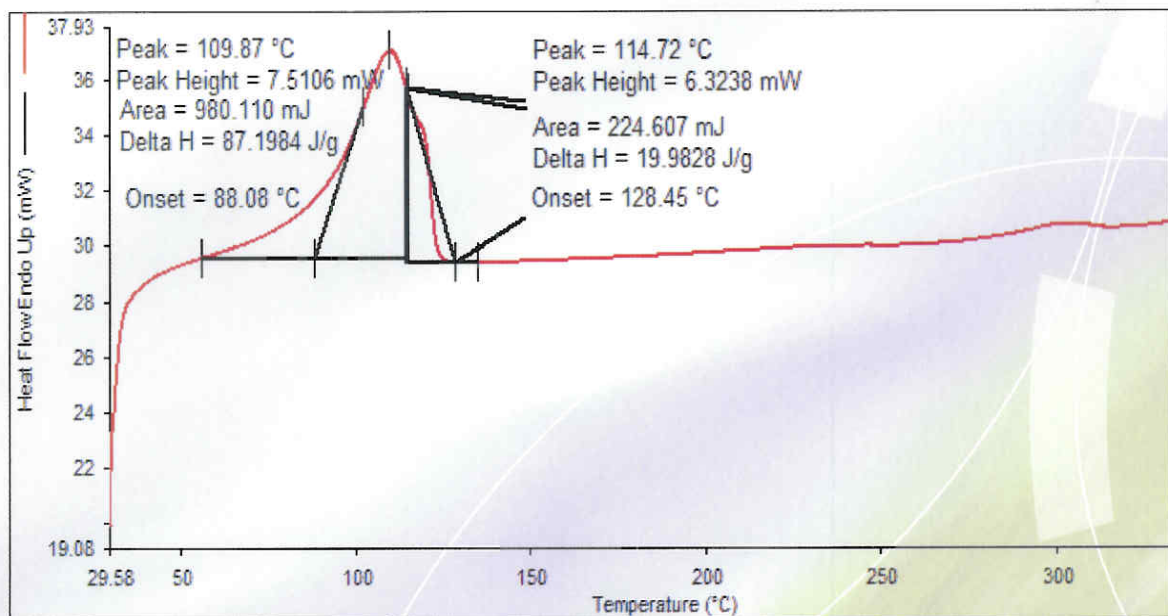
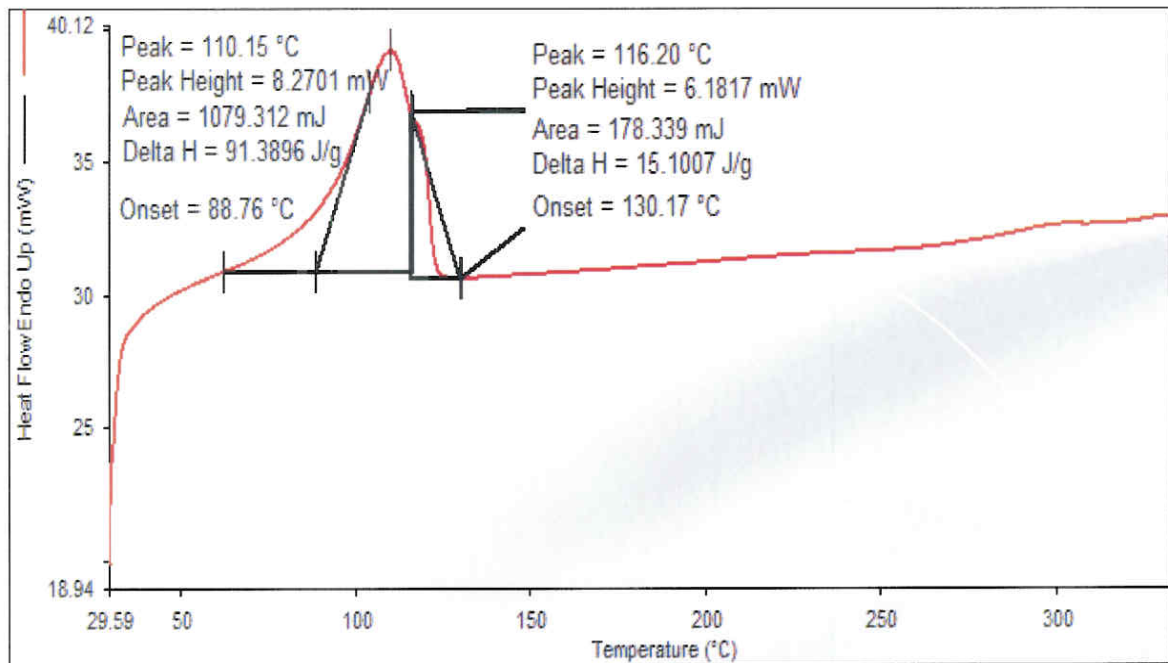


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APPENDIX II

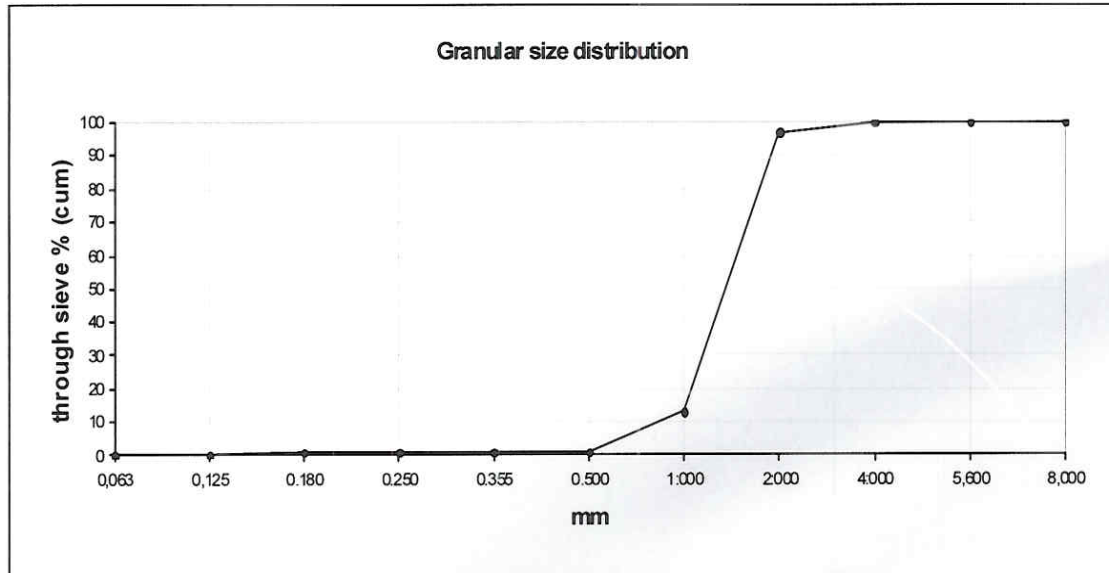
MATERIAL ANALYSES

DSC scan(s) of pile yarn(s)



- | | |
|---|---|
| 1. Heat from 30.00 °C to 300.00 °C at 40.00 °C/min | 4. Heat from 620.00 °C to 880.00 °C at 10.00 °C/min |
| 2. Hold for 15.0 min at 300.00 °C | 5. Hold for 15.0 min at 880.00 °C |
| 3. Heat from 300.00 °C to 620.00 °C at 20.00 °C/min | |

Performance infill particle grading curve



Stabilising infill particle grading curve

