

RESEARCH REPORT - LABORATORY

PROJECT	:	artificial turf for football "Edel XP 57"
PURPOSE RESEARCH	:	testing artificial turf for football
PRINCIPAL	:	Edel Grass B.V. contact: Mr. V. Neuteboom
EXECUTION	:	ISA Sport Innovation & Quality Project Manager: Mr. ir. J.G. Kieft
PRODUCT DESCRIPTION	:	page 2
RESEARCH RESULTS	:	pages 3 - 10

REMARK:

Test results as described in this report are a summary of researched sports functional, durability, climatic resistance characteristics and product identification. Test results are valid only for the complete system as described in this report. Test methods and procedures are in accordance with the "Handbook of Test Methods for Football Turf" (May 2009 edition). Data should be interpreted as a summary of test results and do not imply approval of the system or product by FIFA.

30th March 2010

Instituut voor Sportaccommodaties B.V.

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This is not a FIFA laboratory report and does not confirm or imply FIFA type approval of the product or complete system.

1. Product description

Surface name	Edel XP 57			
Carpet name	Edel XP 57			
Pile length (mm)	57			
Infill layer(s)	Type	Application rate		Size (mm)
		(kg/m ²)	(mm)	
Performance infill	SBR	15	30	0.8 – 2.5
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			

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2. Test results

Test results as described in this report are a summary of researched sports functional, durability, climatic resistance characteristics and product identification. Test results are valid only for the complete system as described in this report. Test methods and procedures are in accordance with the "Handbook of Test Methods for Football Turf (May 2009 edition)". The final results of the research program have been sent to FIFA for approval of the system. Data should therefore be interpreted as a summary of test results and do not imply approval of the system or product by FIFA.

Property	Test condition	Mean result
Vertical ball rebound	Dry	0.98 m
	Wet	0.92 m
	After simulated wear 20.200 cycles	0.98 m
Angle ball rebound	Dry	54%
	Wet	78%
Ball roll	Dry	7.7 m
	Wet	8.2 m
Shock absorption	Dry	63%
	Wet	64%
	After simulated wear 20.200 cycles	58%
	-5°C	60%
	40°C	64%

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Property	Test condition	Mean result
Deformation	Dry	7.5 mm
	Wet	7.0 mm
	After simulated wear 20.200 cycles	5.0 mm
Rotational resistance	Dry	41 Nm
	Wet	40 Nm
	After simulated wear 20.200 cycles	48 Nm
Linear friction Stud deceleration value	Dry	5.5 g
	Wet	5.4 g
Linear friction Stud slide value	Dry	207
	Wet	204
Skin / surface friction	Dry	0.68
Skin abrasion	Dry	-15%

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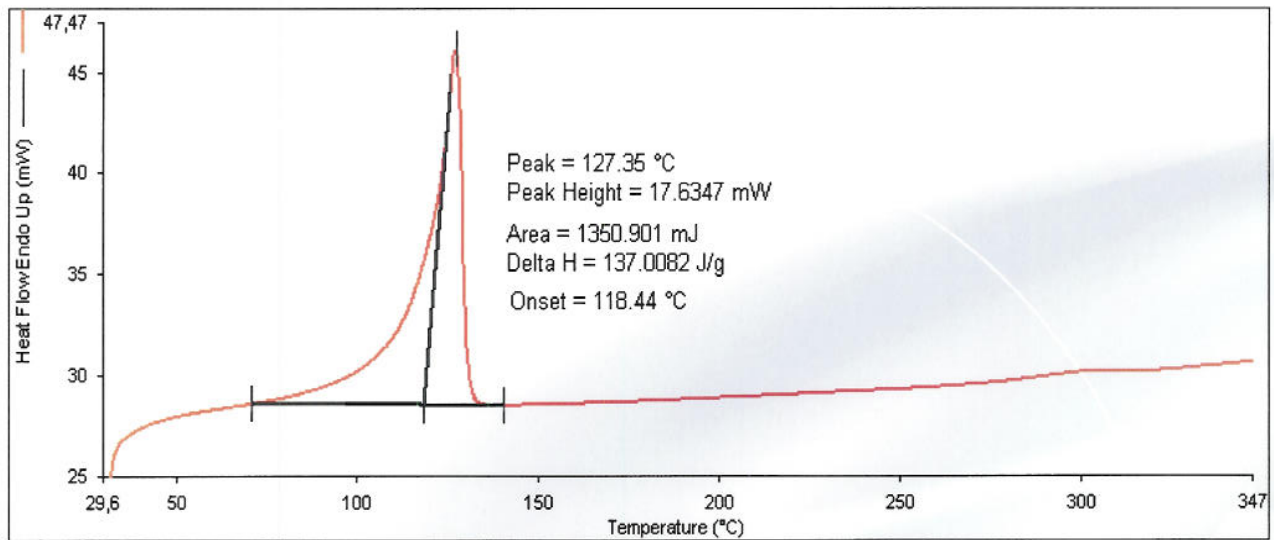
Effects of artificial weathering				
Property		Aspect		Result
Pile yarn (s)		Colour change		4 - 5
		Yarn tensile strength		7%
Polymeric infill		Colour change		4 - 5
		Visual change in composition		No change
Property		Condition		Mean Result
Joint strength	Stitched joints	Unaged		n.a.
		Water aged		n.a.
Joint strength	Bonded joints	Unaged		104 N
		Water aged		82 N
Water permeability (complete system)		N/A		8000 mm/h
Tensile strength of shockpad / e-layer		Unaged		n.a.
Carpet tuft withdrawal		Unaged		48 N
		Water aged		48 N

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Product identification			
Artificial turf and pile yarn(s)	Mass per unit area		2.4 kg/m ²
	Tufts per unit area		10182 /m ²
	Pile length above backing		57 mm
	Pile weight		1503 g/m ²
	Water permeability of carpet		10300 mm/h
Performance infill	Particle size range		0.5 - 2 mm
	Particle shape		Irregular
	Bulk density		0.46 g/cm ³
	Thermo-gravimetric analysis	% organic	65
% inorganic		35	
Stabilising infill	Particle size range		0.25 - 1mm
	Particle shape		Spherical, not angular
	Bulk density		1.52 g/cm ³
Shockpad or e-layer (if supplied as part of system)	Shock absorption		N.A.
	Deformation		N.A.
	Thickness		N.A.

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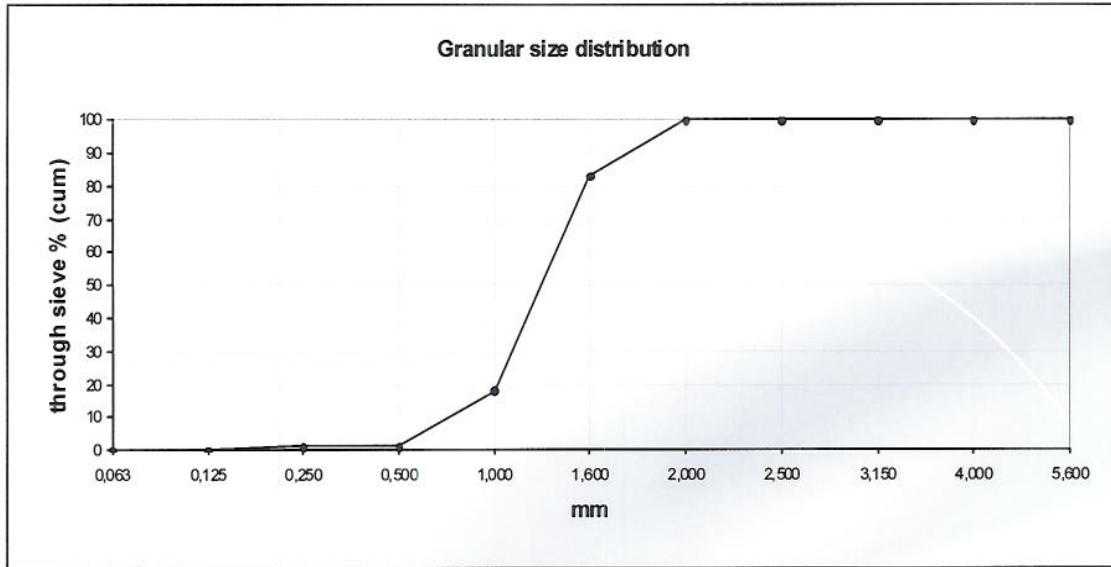
DSC scan(s) of pile yarn(s)



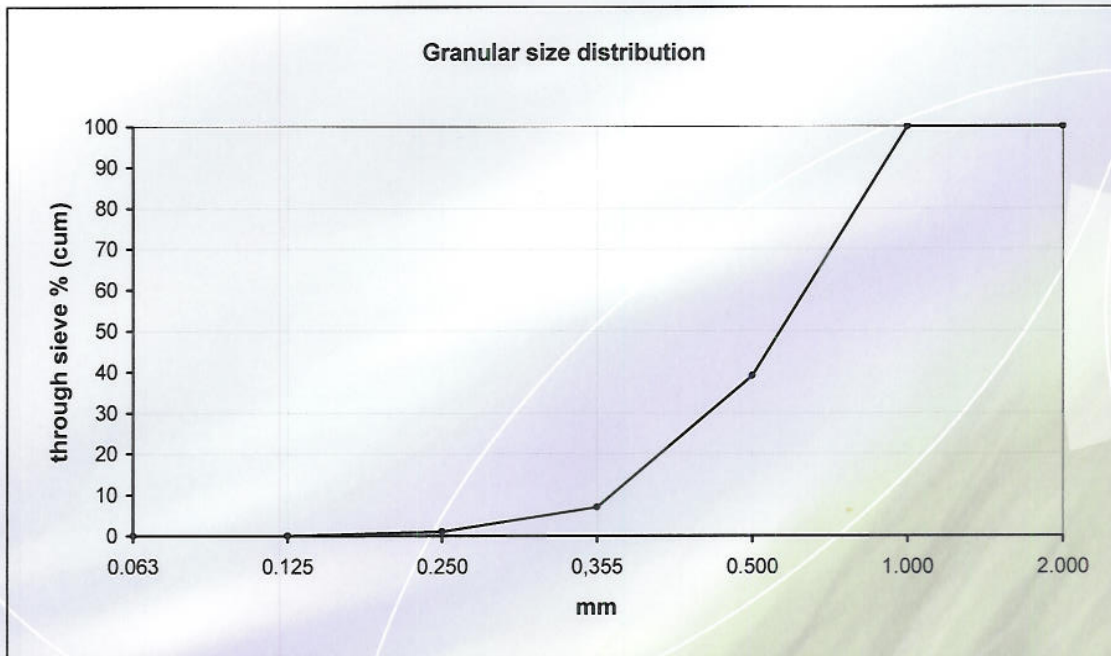
1. Heat from 30.00 °C to 300.00 °C at 50.00 °C/min
2. Cool from 300.00 °C to 30.00 °C at 40.00 °C/min
3. Hold for 8.0 min at 30.00 °C
4. Heat from 30.00 °C to 350.00 °C at 10.00 °C/min

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Performance infill particle grading curve



Stabilising infill particle grading curve

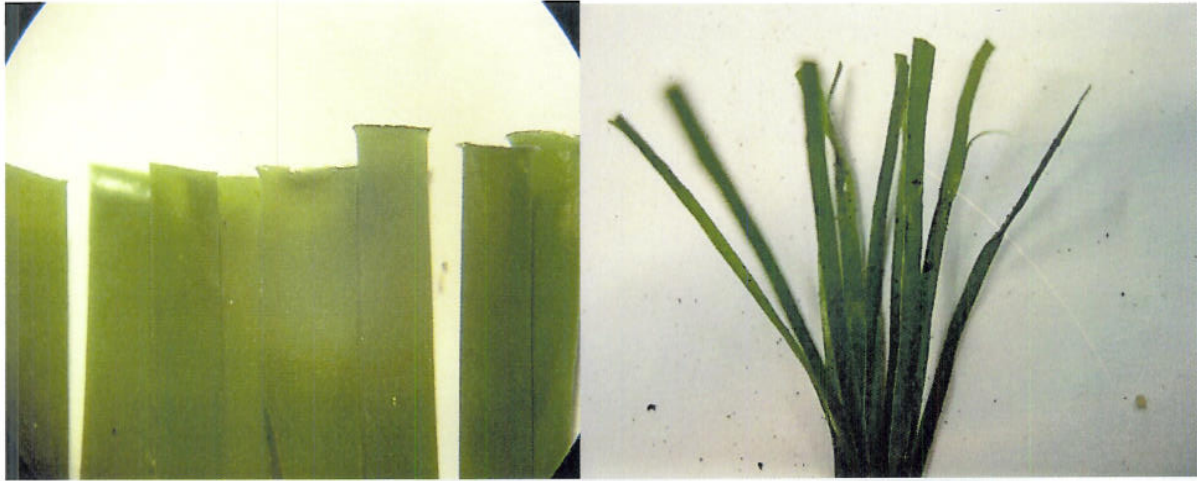


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Product identification		
Unbound sub-bases (if tested as part of system)	Composition	N.A.
	Particle size range	N.A.
	Particle shape	N.A.
	Thickness	N.A.

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Photographs showing the effects of simulated wear



Before (left) and after (right) tread simulation



Before (left) and after (right) tread simulation

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