

## TEST REPORT

### Laboratory tests on underlayment for synthetic turf systems

Tests performed according to various ASTM standards

**Report Number** R18161US-A2

**Products** Gmax Drain

**Client** Mauricio Espinosa,  
Hellas Construction Inc., 12710 Research Boulevard, Austin, TX 78759

**Date** November 16<sup>th</sup>, 2018

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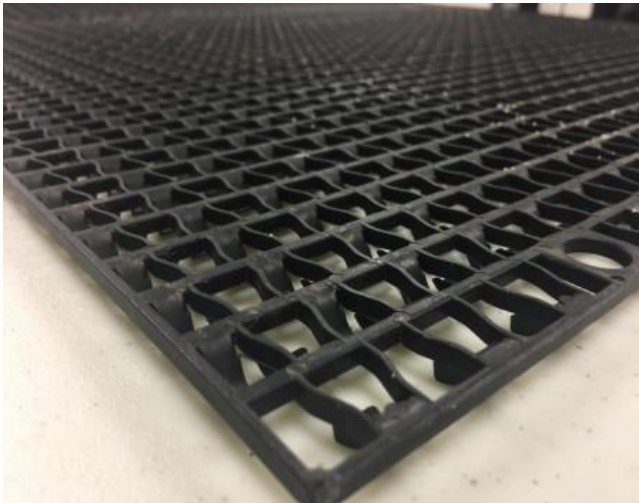
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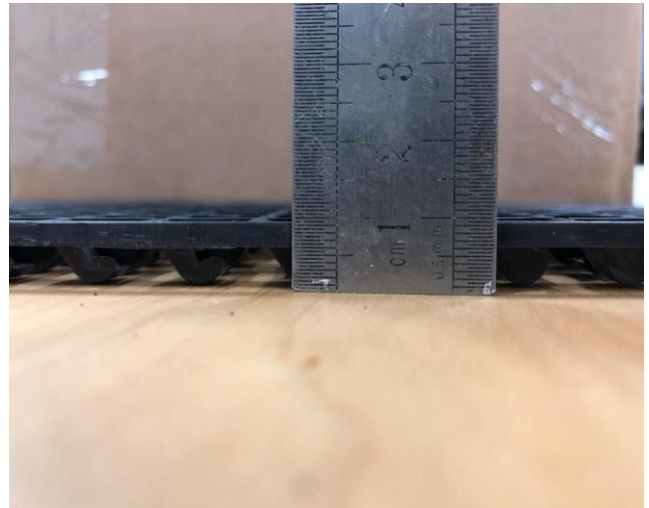
## INFORMATION

Product description	Underlayment for synthetic turf systems			
Product name	Gmax Drain			
Thickness	3/8" (9 mm)			
Sample number	US00176			
Date of reception	October 2018			
Date of tests	October 2018			
Ambient temperature	Min	73°F (23°C)	Max	75°F (24°C)
Relative humidity	Min	48 %RH	Max	50 %RH

### Pictures:



*Gmax Drain general view*



*Gmax Drain profile view*

## RESULTS

### Performances testing (complete system):

Each underlayment was tested for performances using a synthetic turf system with the following configuration.

Configuration tested			
Name of the turf		Matrix Turf ( <i>provided by the client</i> )	
Pile length		2.0'' (50 mm)	
Infill layer ( <i>supplied by Labosport</i> )		Rate	Thickness
Superior	SBR	2.9 lb/ft <sup>2</sup> (14 kg/m <sup>2</sup> )	1.1'' (28 mm)
Inferior	Silica sand	3.7 lb/ft <sup>2</sup> (18 kg/m <sup>2</sup> )	0.5'' (12 mm)
Infill depth measured		1.6'' (40 mm)	



*Matrix turf over Gmax Drain*

Property	Method	Condition	Results
			<i>Matrix turf over Gmax Drain</i>
Impact attenuation ( <i>Gmax</i> )	ASTM F355-A / ASTM F1936	New	107 G
Critical Fall Height ( <i>HIC</i> )	ASTM F355-E / ASTM F1292	New	3.6 feet (1.11 m)
Vertical deformation ( <i>AAA</i> )	ASTM F3189	New	10.0 mm
Heat test ( <i>maximum temperature</i> )	FIFA 14	New	64.5°C (148°F)

## Performances testing (pads only):

Property	Method	Condition	Results
			<i>Gmax Drain</i>
Vertical water permeability	EN 12616	New	> 2000 mm/h (>78 in/h)
Compression strength	ASTM D1667	at 25% strain	10.3 lbs/in <sup>2</sup>
Surface friction	ASTM E303	New, dry	92 BPN
Tensile Strength	ASTM D412	Max. strength	224 lbf
		Elongation	32 %
Coefficient of Linear Thermal Expansion between -30°C and 30°C	ASTM D696	Average	68
		Direction 1	72
		Direction 2	63

## Toxicological analysis (Gmax Drain product only):

Element	Units	Test method	Results	Requirements <i>ASTM F3188</i>	Pass/Fail
Antimony	mg/kg DW	ASTM F3188	6.5	≤ 60	Pass
Arsenic	mg/kg DW	ASTM F3188	<0.5	≤ 25	Pass
Barium	mg/kg DW	ASTM F3188	<1	≤ 1000	Pass
Cadmium	mg/kg DW	ASTM F3188	<0.5	≤ 75	Pass
Chromium	mg/kg DW	ASTM F3188	<0.5	≤ 60	Pass
Lead	mg/kg DW	ASTM F3188	3	≤ 90	Pass
Mercury	mg/kg DW	ASTM F3188	<0.005	≤ 60	Pass
Selenium	mg/kg DW	ASTM F3188	<0.5	≤ 500	Pass

## REPORTED BY



Daniel Edmonds  
(Laboratory Technician) – Writer



Thomas Amadei, T.P.  
(Laboratory Manager) – Approver

