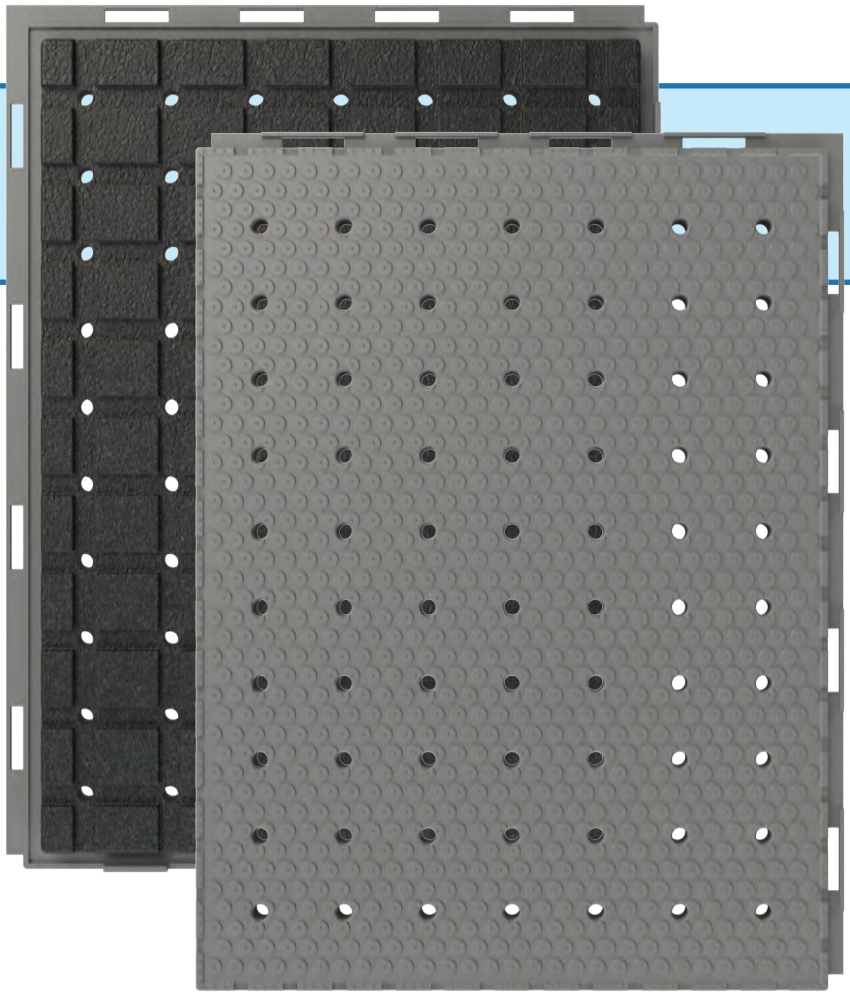
ULTRA BASE MAX™

A DIVISION OF IBT

THE PERFECT FUSION OF PERFORMANCE AND SAFETY

ULTRA BASE MAX™

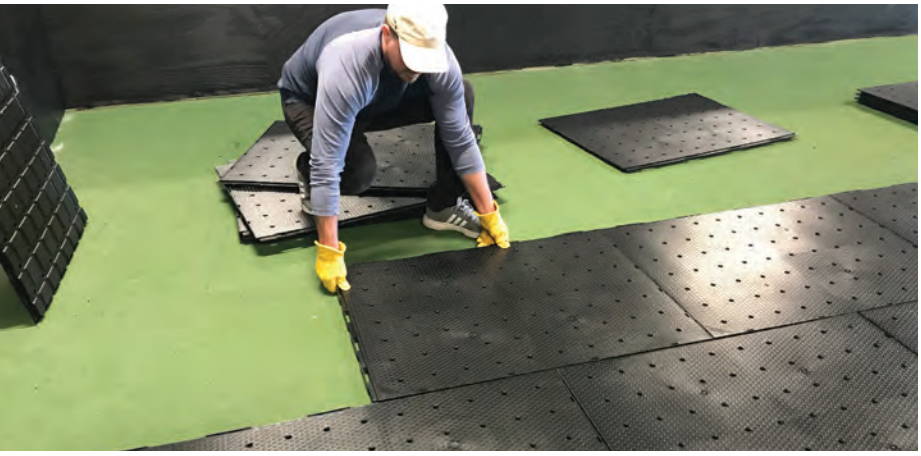


ULTRA BASE MAX

Combining all the properties that you've come to rely on from UltraBaseSystems and fused with a state-of-the-art shock absorbing membrane, Ultra Base MAX delivers unprecedented safety, performance, drainage and ease of installation with our patented "Drop-'N-Lock" technology, resulting in a product unlike anything ever seen in the synthetic turf industry.

FEATURES

- CONSISTENT GMAX
- SUPERIOR ENERGY RESTITUTION
- FASTER PLAYING SURFACE
- BETTER DRAINAGE
- EASY TO INSTALL
- REQUIRES LOWER TURF HEIGHTS
- LITTLE TO NO INFILL REQUIRED
- TURF BARBS



ULTRA BASE MAX™

A DIVISION OF IBT

SAFETY | DRAINAGE | LIFE-CYCLE COST | COST SAVING

CONSISTENT PERFORMANCE | INSTALLATION | LOAD BEARING | SUSTAINABILITY

MADE IN USA

Proudly made in the USA from 100% recycled and recyclable materials.

866.921.7888 | 727.391.9009
www.UltraBaseSystems.com | www.TourLinks.net

ULTRA BASE MAX

Ultra Base MAX is the perfect fusion of performance and safety. Engineered with the patented UltraBaseSystems® rigid structural shell for performance, fused with a state-of-the-art automotive grade shock absorbing membrane for safety, Ultra Base MAX delivers what athletes demand.

What Once Seemed IMPOSSIBLE is Now REALITY!

Ultra Base MAX Panel Detail

Shock Attenuation

Impact energy dissipates downward as well as laterally while providing a safe stable feel under foot.

Energy Restitution

Kinetic energy during play is returned to the athlete promoting peak performance.

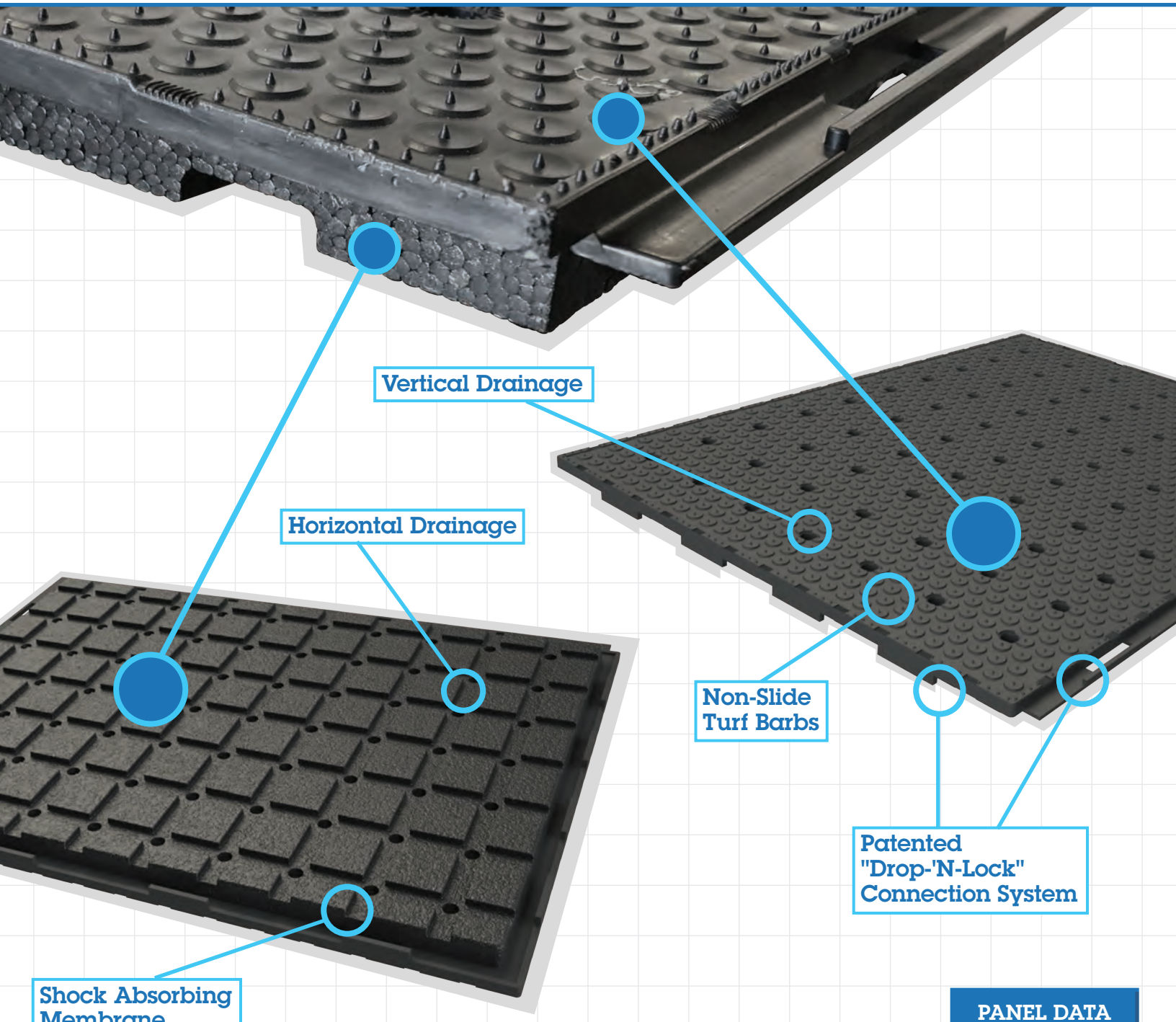
MADE IN USA

Proudly made in the USA from 100% recycled and recyclable materials.

866.921.7888 | 727.391.9009
www.UltraBaseSystems.com | www.TourLinks.net

ULTRA BASE MAX™

TECHNICAL DATA



Combining all the properties that you've come to rely on from UltraBaseSystems and fused with a state-of-the-art shock absorbing membrane, Ultra Base MAX delivers unprecedented safety, performance, drainage and ease of installation with our patented "Drop-'N-Lock" technology, resulting in a product unlike anything ever seen in the synthetic turf industry.

TESTS	SCORE
R-value	2.9
Vertical Drainage	754.3 in
Storage Capacity	.34 gal.

PANEL DATA	
Length	39 3/8"
Width	29"
Depth	1 1/8"
Weight	7.8 lbs
Area	7.93 sf per panel

MADE IN USA

Proudly made in the USA from 100% recycled and recyclable materials.

866.921.7888 | 727.391.9009
www.UltraBaseSystems.com | www.TourLinks.net

ULTRA BASE MAX™

The Perfect Fusion of SAFETY and PERFORMANCE

Ultra Base Max is our solution to the demand for safer and higher performing base technology.

ULTRA BASE MAX PASSES THE TEST

The testing results were performed by an accredited sports testing facility - all tests were performed over concrete, yielding the following results. The results for all of these tests performed met the requirements for a STC Stadium Field. The requirements for a STC Stadium Field are the same as those specified in the FIFA 2-Star Standard. Test results available by request.

Ultra Base MAX - 1" Turf with 1.68 lb/ft2 of Sand & .72 lb/ft2 of Rubber Fill

TEST	SCORE	FIFA 1 STAR (PASS/FAIL)	FIFA 2 STAR (PASS/FAIL)	STC (PASS/FAIL)	INT. RUGBY BOARD (PASS/FAIL)
Force Reduction	70%	PASS	PASS	PASS	PASS
Vertical Deformation	10mm	PASS	PASS	PASS	PASS
Energy Restitution	40%	PASS	PASS	PASS	PASS
Gmax/HIC Shock Attenuation	82	PASS	PASS	PASS	PASS
Rotational Resistance	32	PASS	PASS	PASS	PASS
HIC Impact Attenuation	1.3m	PASS	PASS	PASS	PASS

Ultra Base MAX - 1.5" Turf with 3.3 lb/ft2 of Sand & 1.4 lb/ft2 of Rubber Fill

TEST	SCORE	FIFA 1 STAR (PASS/FAIL)	FIFA 2 STAR (PASS/FAIL)	STC (PASS/FAIL)	INT. RUGBY BOARD (PASS/FAIL)
Force Reduction	67%	PASS	PASS	PASS	PASS
Vertical Deformation	9.4mm	PASS	PASS	PASS	PASS
Energy Restitution	43%	PASS	PASS	PASS	PASS
Gmax/HIC Shock Attenuation	82	PASS	PASS	PASS	PASS
Rotational Resistance	38	PASS	PASS	PASS	PASS
HIC Impact Attenuation	1.4m	PASS	PASS	PASS	PASS

Ultra Base MAX - 2" Turf with 5 lb/ft2 of Sand & 2 lb/ft2 of Rubber Fill

TEST	SCORE	FIFA 1 STAR (PASS/FAIL)	FIFA 2 STAR (PASS/FAIL)	STC (PASS/FAIL)	INT. RUGBY BOARD (PASS/FAIL)
Force Reduction	68%	PASS	PASS	PASS	PASS
Vertical Deformation	9.8mm	PASS	PASS	PASS	PASS
Energy Restitution	41%	PASS	PASS	PASS	PASS
Gmax/HIC Shock Attenuation	79	PASS	PASS	PASS	PASS
Rotational Resistance	34	PASS	PASS	PASS	PASS
HIC Impact Attenuation	1.5m	PASS	PASS	PASS	PASS

Ultra Base MAX
No Turf/No Fill

TEST	SCORE
Force Reduction	55%
Vertical Deformation	5.6mm
Energy Restitution	54%
Gmax/HIC Shock Attenuation	117
Rotational Resistance	N/A
HIC Impact Attenuation	1.0m

TEST	SCORE
R-value	2.9
Vertical Drainage	754.3 in
Storage Capacity	.34 gal.

WHAT'S IT ALL MEAN?

Force Reduction
Force Reduction measures the amount of absorption a surface provides at the moment of impact.

Vertical Deformation
Vertical Deformation measures the amount of deflection of a surface as an athlete runs on it. It is a indicator of the speed and stability of the surface.

Energy Restitution
Energy Restitution is a measurement of the amount of energy returning back to the athlete from the surface which dictates the athletes speed, performance and level of fatigue.

Gmax/HIC Shock Attenuation
Gmax is the ASTM official device for measuring the hardness of a surface as it relates to head and body safety.

Rotational Resistance
Rotational Resistance measures the amount of movement of the surface underfoot affecting the athletes ability to change direction reducing the potential for lower leg injury.

HIC Impact Attenuation
HIC calculates the Head Injury Criteria (HIC). HIC is used to predict the potential of head injury resulting from a surface impact.

R-value
R-value measures the insulation potential of a material when subjected to a variety of temperatures.

Vertical Drainage
Vertical Drainage calculates the amount of fluid moving through a material. Measured in inches per hour or gallons per minute per square yard.

Storage Capacity
Storage Capacity determines the volume of liquid able to be stored within the panel. Measured in gallons per panel.

Horizontal Drainage
Horizontal Drainage calculates the amount of liquid which evacuates laterally from the panel. Measured in inches per hour or gallons per minute per square yard.

MADE IN USA

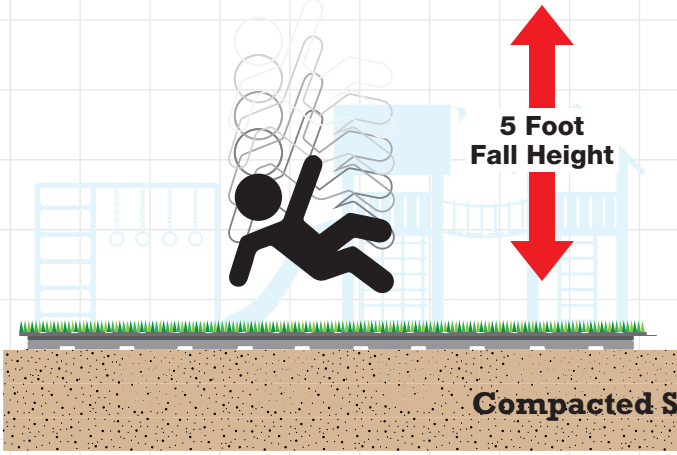
Proudly made in the USA from 100% recycled and recyclable materials.

866.921.7888 | 727.391.9009
www.UltraBaseSystems.com | www.TourLinks.net

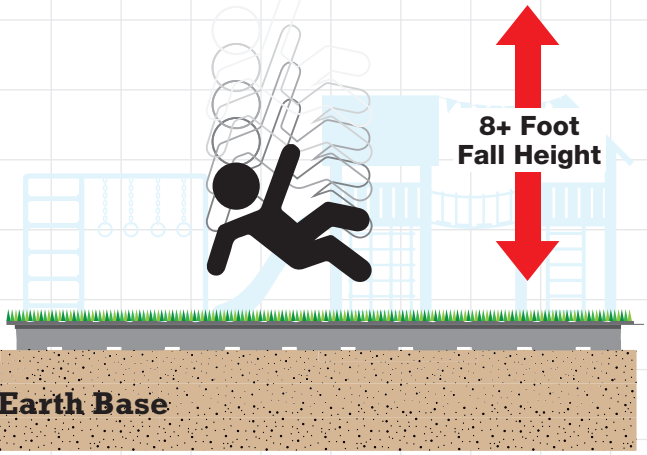
ULTRA BASE MAX™

PLAYGROUND SOLUTION

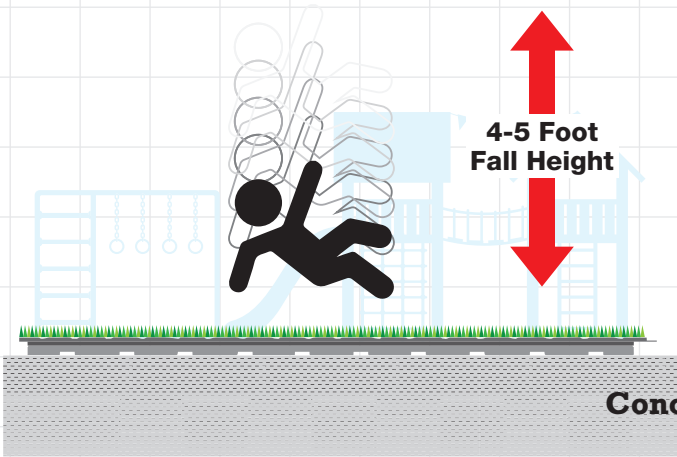
¾" ULTRA MAX PLAYGROUND SYSTEM



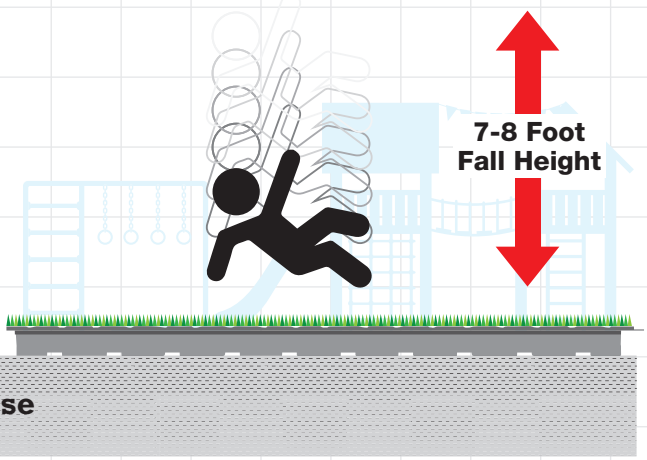
2" ULTRA MAX PLAYGROUND SYSTEM



¾" ULTRA MAX PLAYGROUND SYSTEM
with filled and non-filled turf system



2" ULTRA MAX PLAYGROUND SYSTEM
with filled turf system



Fall heights will increase or decrease depending on *Ultra Base MAX Playground System* selected, sub-base preparation, turf selection and infill amounts.

Benefits of the Ultra Base MAX Playground System

- Solid feel under foot
- Turf grips panel surface which eliminates movement
- Turf seams won't deflect and separate
- Easy to cut and install
- Turf fastens easily to the Ultra Base MAX surface
- Rapid vertical and horizontal drainage on any sub-base

ULTRA BASE MAX™

1(866) 921-7888 or (727) 391-9009 | www.UltraBaseSystems.com | www.tourlinks.net

MADE IN USA Made in USA and Canada from recycled and recyclable materials.

TEST REPORT

Laboratory evaluation of an athletic floor product

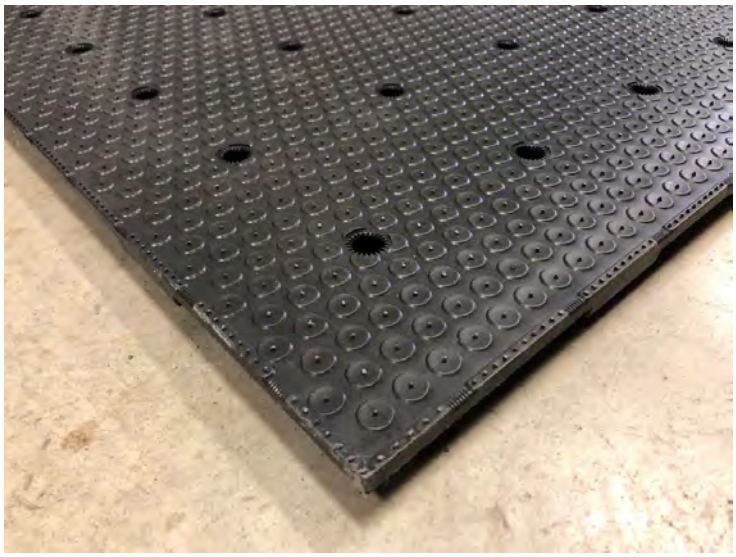
Tests performed according to internal test method

Report Number	**R19005CAN-A1**
Product	**Ultra-Base Max Panel** Innovative Base Technologies
Client	**Dave Barlow** Innovative Base Technologies, 5030 Seminole Blvd. Saint Petersburg, FL 33708
Date	**January 21st, 2019**

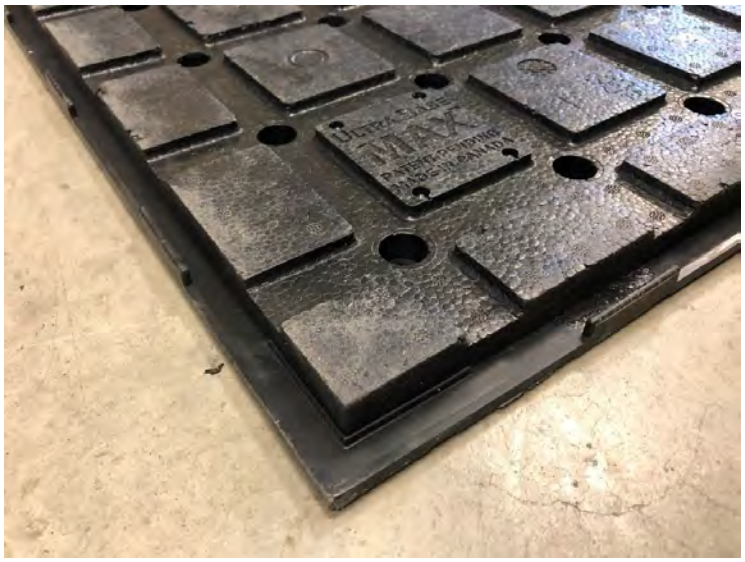
LABOSPORT CANADA ● contact@labosport.com ● (514) 277–9111
5661 Rue De Lanaudière ● Montréal ● Québec ● H2G 3A5 ● Canada
www.labosport.com

INFORMATION

Product description	**Athletic floor product**			
Product name	**Ultra-Base Max Panel**			
Thickness	**1''** *(25 mm)*			
Manufacturer	**Innovative Base Technologies**			
Sample Number	**CAN003215**			
Date of Reception	**October 2018**			
Date of Testing	**January 2019**			
Temperature (°C)	**Min**	**22**	**Max**	**24**
Humidity (%)	**Min**	**49**	**Max**	**51**



Sample top view



Sample bottom view

INTRODUCTION

Protocol:

The panel sample was tested for its resistance to compression using a tensile tester machine of 5kN capacity with a 25 mm *(1")* diameter cylindrical indenter. A load of 1882 N was applied using an indenter with a surface area of 0,761 in² in order to reproduce a force of 80 000 psf (lbs/ft²) or 556 psi (lbs/in²) as requested by the client.

After compression, the sample was examined for signs of collapsing, damages or visible permanent indentation. At the presence of damage, indentation amplitude was recorded and photographs were taken.

Calculation:

$$Stress\ (psf\ or\ lbs/ft^2) = \frac{Applied\ load\ (lbs)}{Indenter\ area\ (ft^2)}$$

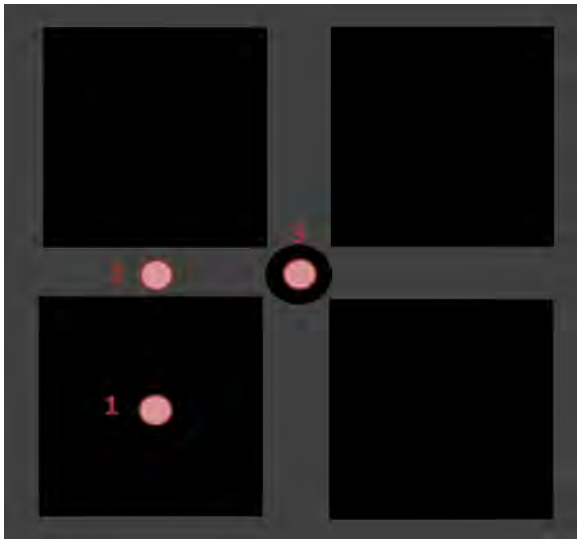
Meaning:

$$Applied\ load\ (lbs) = Stress\ (psf\ or\ lbs/ft^2)\ \times\ Indenter\ area\ (ft^2)$$

Therefore:

$$Applied\ load\ (lbs) = 80\ 000\ (psf) \times\ 0.00529\ (ft^2) = 423\ (lbs)\ which\ equals\ to\ 1882\ (N)$$ in metric system

Tests locations selected:



<---------- 31 cm *(±12 in)* ---------->

Considering the specific design of the panel sample, the load applied through a 25 mm *(1")* diameter cylindrical indenter might be spread differently depending on where it is applied on the panel.

Consequently, 3 locations were selected in order to cover various favourable and unfavourable scenarios:

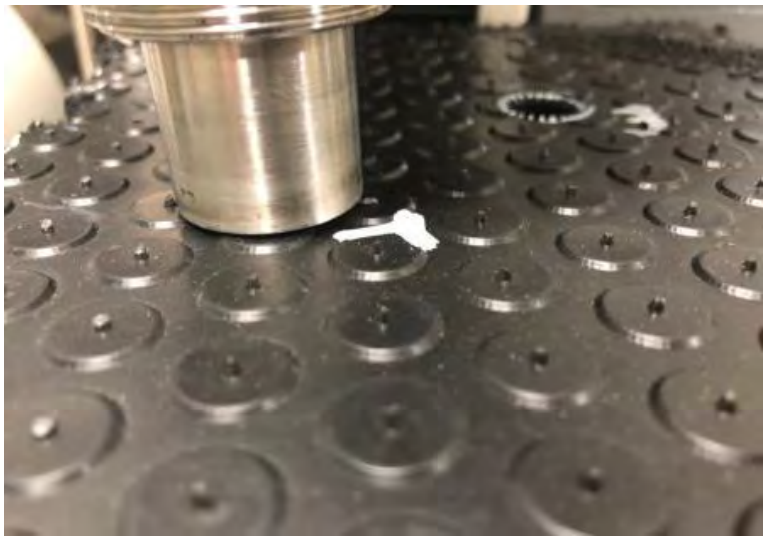
- Theoretical weakest spots: location 2 and 3
- Theoretical strongest spots: location 1

Note: Opposite figure shows the design of the panel from the bottom view for illustration purposes. The load was applied on the top side of the panel sample.

RESULTS

Property	Condition	Method	Test locations		
			1	3	6
Total collapse	Visual	Photograph	No	No	No
Damages	Visual	Photograph	No	No	No
Permanent indentation	Visual	Photograph	No	No	No
	Indentation amplitude	Thickness comparator	-	-	-

General view



Sample during test

CONCLUSION

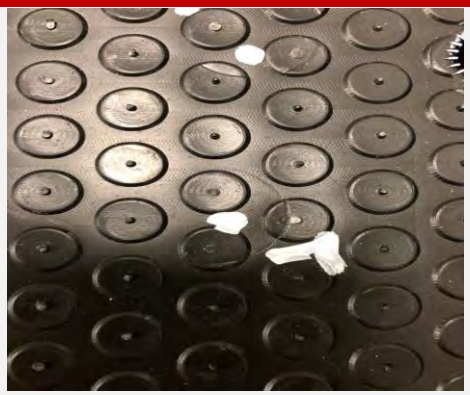
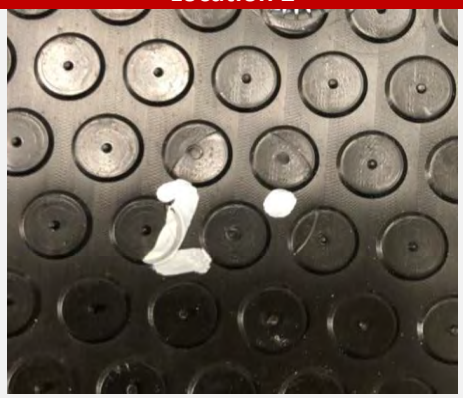
The results obtained showed that the panel sample tested can resist a compression of 80,000 psf without collapsing. The three locations only showed light marks / scratches almost not perceivable.

REPORTED BY

Joris Delage
(Laboratory Technician) - Writer

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

APPENDIX – PICTURES

Location 1	Location 2	Location 3
		
		

TEST REPORT

Laboratory evaluation of an artificial turf system

Tests performed according to EN 933-1/ASTM D 5644, EN 14955, EN 1097-3, EN 15301-1, EN 15306 and XP CEN TS 16717 standards.

Report Number	**R18390CAN-B2**
Product	**UltraBase MAX shockpad / Expanded Polypropylene shockpad**
Client	**Dave Barlow** Innovative Base Technologies, 5030 Seminole Blvd. Saint Petersburg, FL 33708
Date	**December 04th, 2018**

This report contains 4 pages in total. Reproduction of this report is authorized only in its entire form. Results reported are valid only for the products tested. To declare the conformity (or not), the uncertainty of the results was not taken into account. Detailed results are available on request.

LABOSPORT CANADA ● contact@labosport.com ● (514) 277–9111
5661 Rue De Lanaudière ● Montréal ● Québec ● H2G 3A5 ● Canada
www.labosport.com

INFORMATION

Product description	**Shockpad products tested with generic landscape / sport turf systems**			
Product name	**Ultra-Base MAX shockpad**		**Expanded Polypropylene shockpad**	
Thickness	**1''** *(25 mm)*		**0.9''** *(23 mm)*	
Manufacturer	**Innovative Base Technologies**		**Provided by the client**	
Sample Number	***Synthetic turf systems***		***Shockpad products***	
	Generic landscape turf: CAN003213		**Ultra-Base MAX: CAN003215**	
	Generic sport turf: CAN002246		**Expanded Polypropylene: CAN002822**	
Date of Reception	**October 25th 2018**			
Date of Testing	**November 2018**			
Temperature (°C)	**Min**	**22**	**Max**	**24**
Humidity (%)	**Min**	**49**	**Max**	**51**
Configuration tested				
Name of the turf	**Generic landscape turf**		**Generic landscape turf**	
Pile length	**1.2''** *(30 mm)*		**2''** *(50 mm)* **Monofilament**	
Infill layers	**Type**	**Rate**	**Type**	**Rate**
Superior	*none*	*n/a*	**SBR**	**2.5 lb/ft²**
Inferior	**Silica sand**	**2.0 lb/ft²**	**Silica sand**	**3.0 lb/ft²**
Infill depth measured	**0.7''** *(18 mm)*		**1.4''** *(35 mm)*	
Underlayment	**Ultra-Base MAX / Exp. Polypropylene**		**Ultra-Base MAX / Exp. Polypropylene**	
Underlayment thickness	**25 mm / 23 mm**		**25 mm / 23 mm**	

Shockpad products pictures :

Ultra-Base MAX shockpad

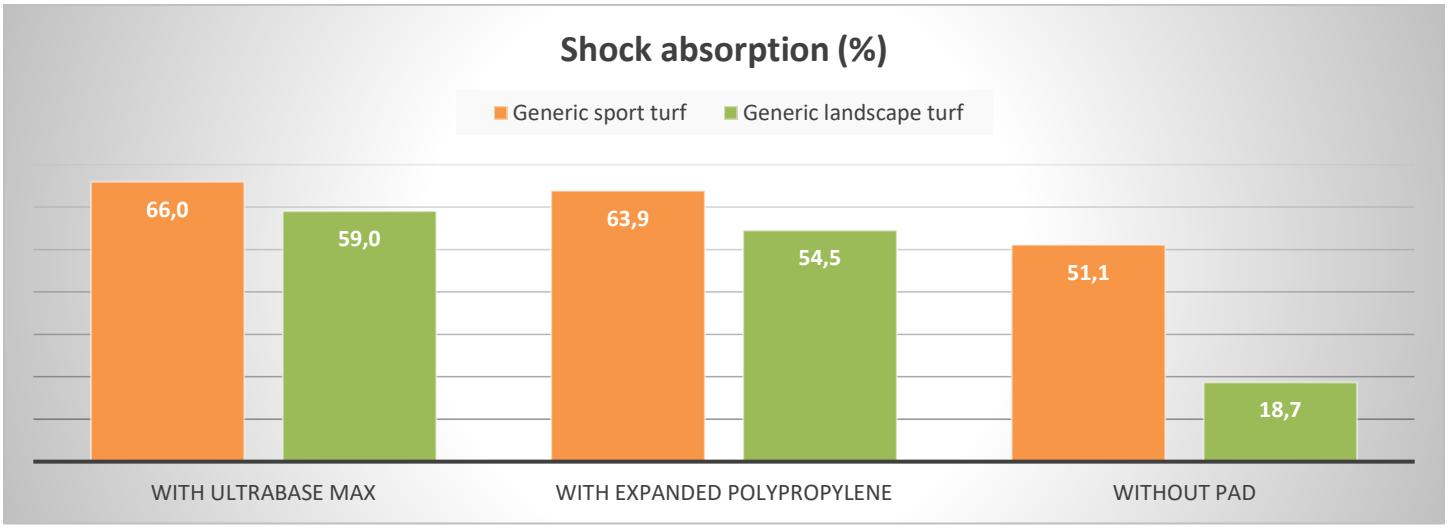
Expanded Polypropylene shockpad

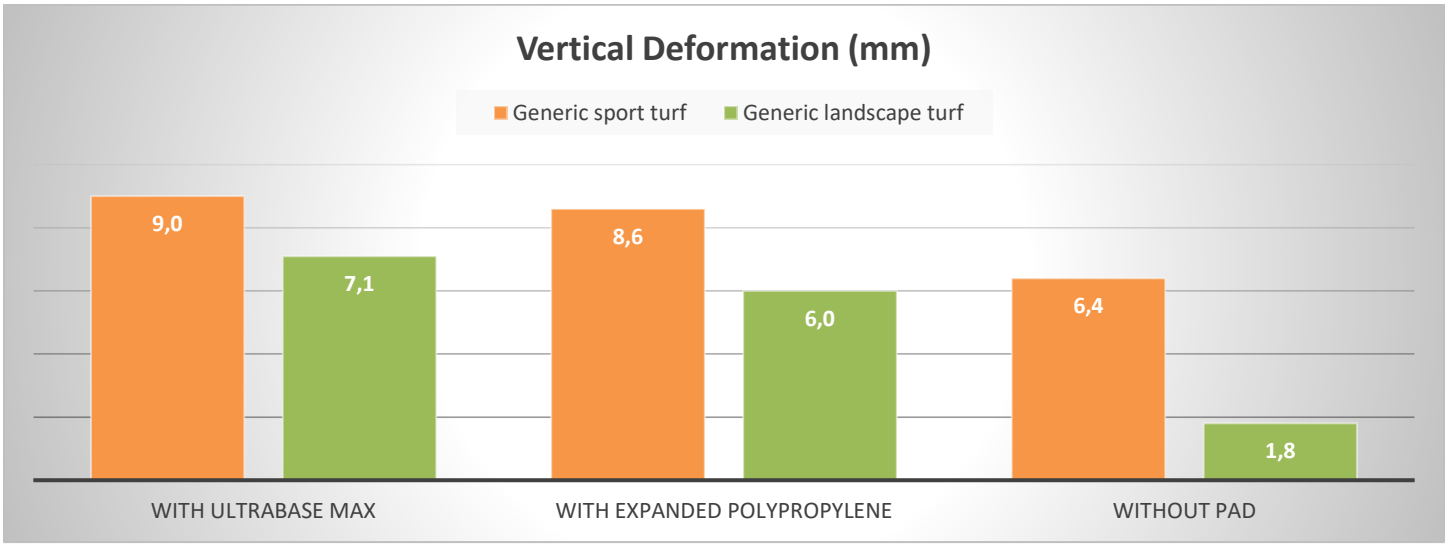
RESULTS

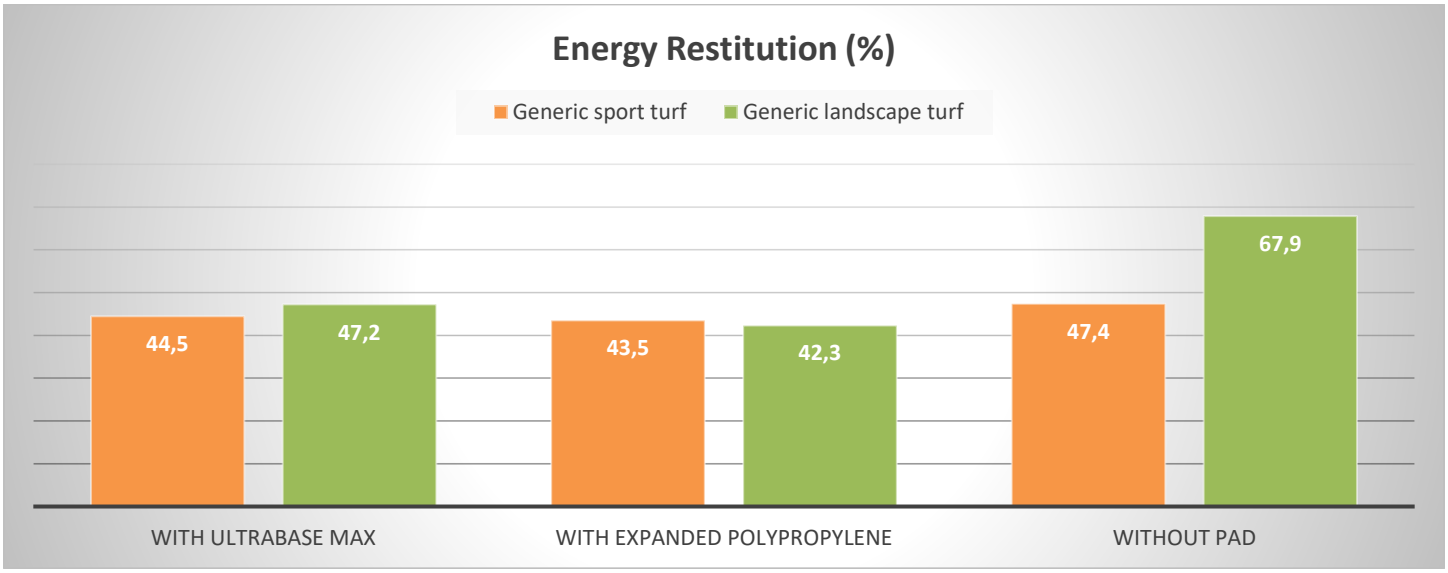
Note: both generic landscape and generic sport turf system used over each shockpad were primarily exposed to 20,000 cycles of Lisport simulated wear according to EN 15306 standard.

Property	Method	Condition	Generic landscape turf system			Generic sport turf system		
			+ UB Max	*+ Exp. PP*	*+No pad*	*+ UB Max*	*+ Exp. PP*	*+No pad*
Shock Absorption	**EN 16717 / ASTM F3189**	**After Lisport 20,000 cycles – EN 15306**	**59.0 %**	**54.5 %**	**18.7 %**	**66.0 %**	**63.9 %**	**51.1 %**
Vertical Deformation	**EN 16717 / ASTM F3189**		**7.1 mm**	**6.0 mm**	**1.8 mm**	**9.0 mm**	**8.6 mm**	**6.4 mm**
Energy Restitution	**EN 16717 / ASTM F3189**		**47.2 %**	**42.3 %**	**67.9 %**	**44.5 %**	**43.5 %**	**47.4 %**
Infill Depth	**EN 1969**		**0.7”** *(17 mm)*			**1”** *(26 mm)*		

GRAPHIC REPRESENTATION







REPORTED BY

Daniel Po
(Laboratory Technician) - Writer

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

TEST REPORT

Laboratory evaluation of artificial turf systems over shockpads

Tests performed according to EN 933-1/ASTM D 5644, EN 14955, EN 1097-3, EN 15301-1, EN 15306, EN 1177 and EN 16717 standards

Report Number	**R18390CAN-C2**
Product	**UltraBase MAX shockpad / Expanded Polypropylene shockpad**
Client	**Dave Barlow** Innovative Base Technologies, 5030 Seminole Blvd. Saint Petersburg, FL 33708
Date	**December 10th, 2018**

This report contains 5 pages in total. Reproduction of this report is authorized only in its entire form. Results reported are valid only for the products tested. To declare the conformity (or not), the uncertainty of the results was not taken into account. Detailed results are available on request.

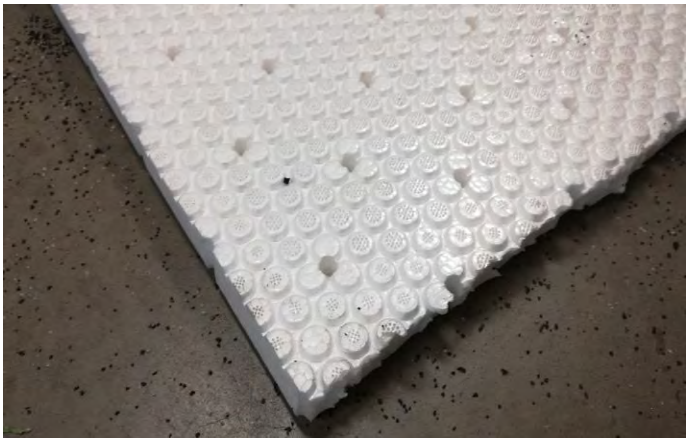
LABOSPORT CANADA ● contact@labosport.com ● (514) 277–9111
5661 Rue De Lanaudière ● Montréal ● Québec ● H2G 3A5 ● Canada
www.labosport.com

INFORMATION

Product description	**Shockpad products tested with generic landscape / sport turf systems**					
Product name	**Ultra-Base MAX shockpad**			**Expanded Polypropylene shockpad**		
Thickness	**1''** *(25 mm)*			**0.9''** *(23 mm)*		
Manufacturer	**Innovative Base Technologies**			**Provided by the client**		
Sample Number	***Synthetic turf systems*** **Generic landscape turf: CAN003213** **Generic sport turf: CAN002246**			***Shockpad products*** **Ultra-Base MAX: CAN003215** **Expanded Polypropylene: CAN002822**		
Date of Reception	**October 25th 2018**					
Date of Testing	**November 2018**					
Temperature (°C)	**Min**	**22**		**Max**	**24**	
Humidity (%)	**Min**	**49**		**Max**	**51**	
Configuration tested						
Name of the turf	**Generic Landscape Turf**		**Generic 2'' Sport Turf**		**Generic 2.5'' Sport Turf**	
Pile length	**1.2''** *(30 mm)*		**2''** *(50 mm)* **Monofilament**		**2.5''** *(60 mm)* **Monofilament**	
Infill layers	**Type**	**Rate**	**Type**	**Rate**	**Type**	**Rate**
Superior	*none*	*n/a*	**SBR**	**2.5 lb/ft²**	**SBR**	**3.5 lb/ft²**
Inferior	**Silica sand**	**2.0 lb/ft²**	**Silica sand**	**3.0 lb/ft²**	**Silica sand**	**3.0 lb/ft²**
Infill depth measured	**0.7''** *(18 mm)*		**1.4''** *(35 mm)*		**1.8''** *(45 mm)*	
Underlayment	**Ultra-Base MAX (25mm) / Exp. Polyprop. (23mm)**		**Ultra-Base MAX (25mm) / Exp. Polyprop. (23mm)**		**Ultra-Base MAX**	

Shockpad products pictures :

Ultra-Base MAX shockpad



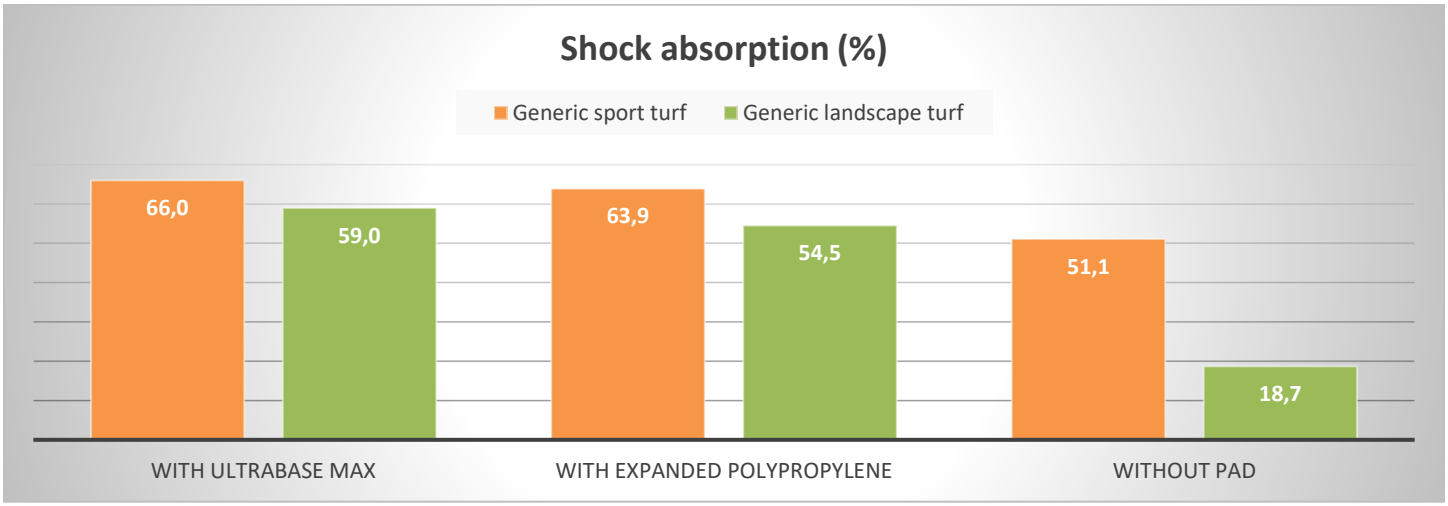
Expanded Polypropylene shockpad

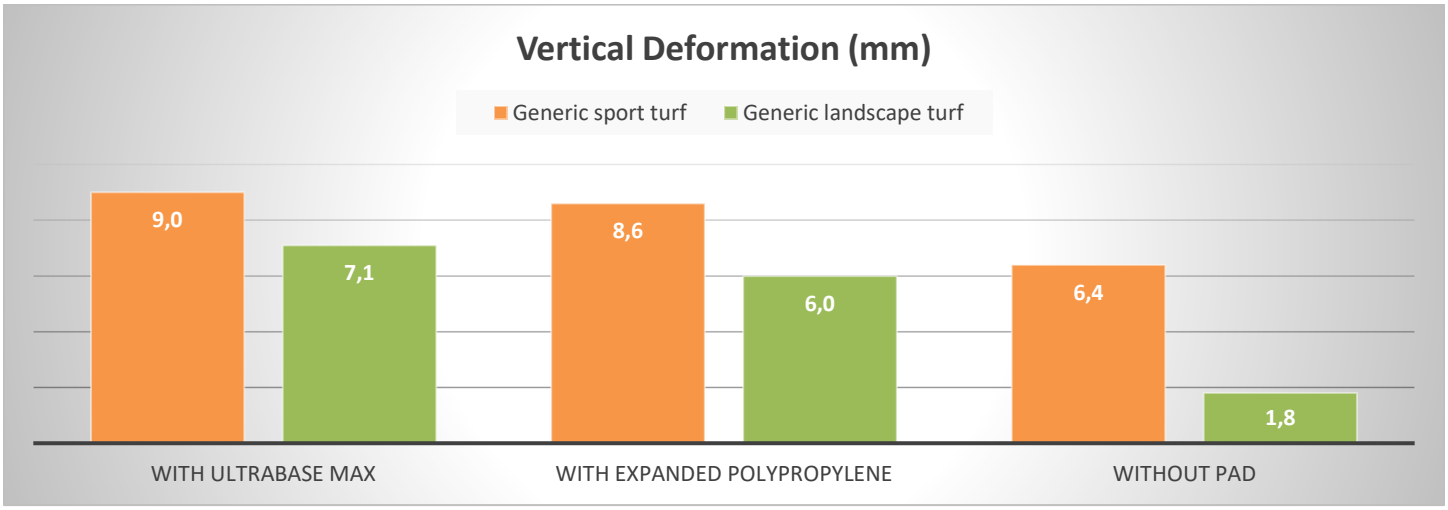
RESULTS – *GENERIC LANDSCAPE TURF VS GENERIC 2'' SPORT TURF*

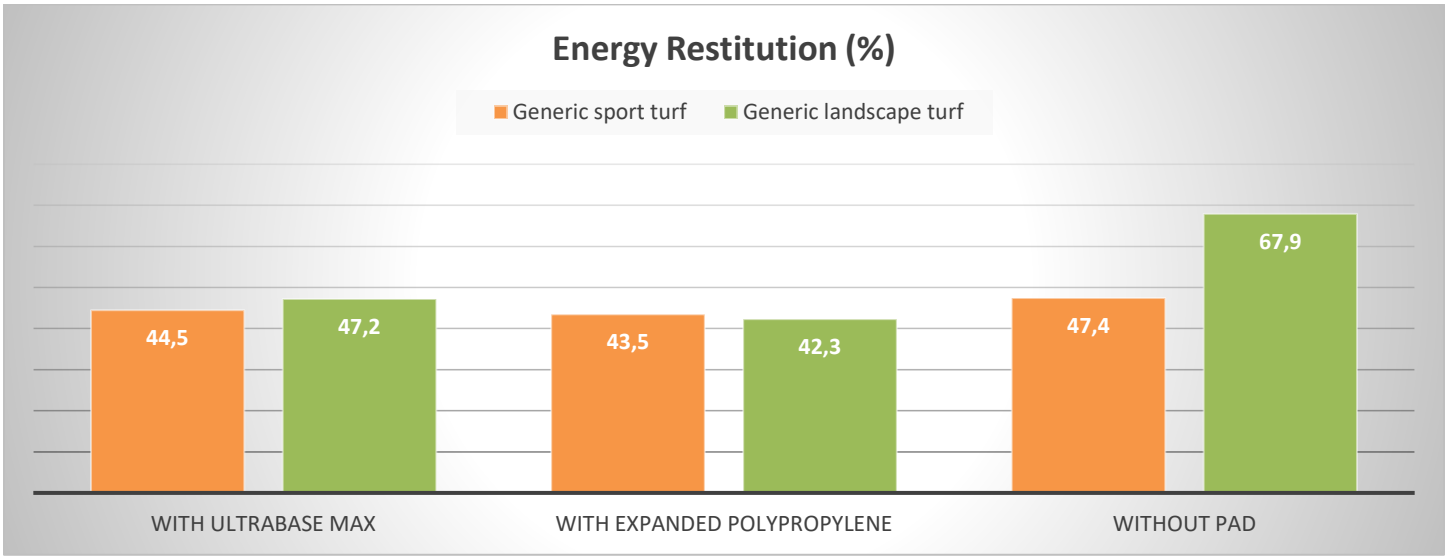
Note: both generic landscape and generic 2'' sport turf system used over each shockpad were primarily exposed to 20,000 cycles of Lisport simulated wear according to EN 15306 standard.

Property	Method	Condition	Generic Landscape Turf			Generic 2'' Sport Turf		
			+ UB Max	*+ Exp. PP*	*+No pad*	*+ UB Max*	*+ Exp. PP*	*+No pad*
Shock Absorption	**EN 16717 / ASTM F3189**	**After Lisport 20,000 cycles – EN 15306**	**59.0 %**	**54.5 %**	**18.7 %**	**66.0 %**	**63.9 %**	**51.1 %**
Vertical Deformation	**EN 16717 / ASTM F3189**		**7.1 mm**	**6.0 mm**	**1.8 mm**	**9.0 mm**	**8.6 mm**	**6.4 mm**
Energy Restitution	**EN 16717 / ASTM F3189**		**47.2 %**	**42.3 %**	**67.9 %**	**44.5 %**	**43.5 %**	**47.4 %**
Infill Depth	**EN 1969**		**0.7''** *(17 mm)*			**1''** *(26 mm)*		

GRAPHIC REPRESENTATION







RESULTS – *GENERIC 2.5'' SPORT TURF*

Note: generic 2.5'' sport turf system used was primarily exposed to 20,000 cycles of Lisport simulated wear according to EN 15306 standard.

Property	Method	Condition	Units	Requirement	Drop height	Results
Critical Fall Height	EN 1177 / World Rugby Reg. 22	New	HIC	HIC < 1000	4.6 ft / 1.4 m	624
					5.3 ft / 1.6 m	796
					6.6 ft / 2.0 m	1 129
					7.2 ft / 2.2 m	1 404
					Critical fall height:	5.9 ft / 1.81 m

Property	Method	Condition	Units	Requirement	Drop height	Results
Critical Fall Height	EN 1177 / World Rugby Reg. 22	After Lisport 20,000 cycles – EN 15306	HIC	HIC < 1000	4.6 ft / 1.4 m	613
					5.3 ft / 1.6 m	792
					6.6 ft / 2.0 m	1 261
					7.2 ft / 2.2 m	1 460
					Critical fall height:	5.8 ft / 1.77 m

REPORTED BY

Daniel Po
(Laboratory Technician) - Writer

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

TEST REPORT

Laboratory evaluation of an athletic floor product

Tests performed according to EN 16717 and EN 12235 standard

Report Number	**R19222CAN-A2**
Product	**Field Hockey Turf System + Ultra-Base Max Panel** *(Higher density version)*
Client	**Dave Barlow** Innovative Base Technologies, 5030 Seminole Blvd. Saint Petersburg, FL 33708
Date	**May 24th, 2019**

This report contains 3 pages in total. It replaces and cancels report R1922CAN-A1 of May 22nd, 2019, please delete the previous document.

LABOSPORT CANADA ● contact@labosport.com ● (514) 277–9111
5661 Rue De Lanaudière ● Montréal ● Québec ● H2G 3A5 ● Canada
www.labosport.com

INFORMATION

Product description	**Field hockey turf system over athletic panel**			
Product name	**Field Hockey Turf System**		**Ultra-Base Max Panel** *(Higher density version)*	
Thickness	**0.6”** *(15 mm)*		**1’’** *(25 mm)*	
Manufacturer	*Unknown*		**Innovative Base Technologies**	
Sample Number	**CAN003399**		**CAN003413**	
Date of Reception	**May 7th, 2019**			
Date of Testing	**May 21st, 2019**			
Temperature (°C)	**Min**	**22**	**Max**	**24**
Humidity (%)	**Min**	**49**	**Max**	**51**

Ultra-Base Max Panel **(Higher density version) –** ***top***

Ultra-Base Max Panel **(Higher density version) –*bottom***

Field hockey Turf sytem

Field hockey turf over Max Panel (Higher density version)

RESULTS

Property	Method	Condition	Results			Average	Recommended range
			Trial 1	Trial 2	Trial 3		
Shock Absorption	**ASTM F3189 / EN 16717** *(AAA)*	**Wet**	59.5 %	58.7 %	60.2 %	**59.5 %**	**45 – 60 %**
Vertical Deformation	**ASTM F3189 / EN 16717** *(AAA)*		8.1 mm	7.9 mm	8.6 mm	**8.2 mm**	**4 – 9 mm**
Energy Restitution	**ASTM F3189 / EN 16717** *(AAA)*		39.3 %	40.2 %	38.1 %	**39.2 %**	**none**
Vertical Ball Rebound	**EN 12235** *(hockey ball)*		272 mm	263 mm	326 mm	**287 mm**	**100 – 400 mm**

REPORTED BY

Maxime Favé
Laboratory Technician) - Writer

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

RESULTS

Property	Method	Condition	Results			Average	Recommended range
			Trial 1	Trial 2	Trial 3		
Shock Absorption	**ASTM F3189 / EN 16717** *(AAA)*	**Wet**	63	60.7	58.7	**59.7**	**45 – 60 %**
Vertical Deformation	**ASTM F3189 / EN 16717** *(AAA)*		9.24	8.54	7.69	**8.11**	**4 – 9 mm**
Energy Restitution	**ASTM F3189 / EN 16717** *(AAA)*		31.5	36.2	40.1	**38.1**	**none**
Vertical Ball Rebound	**EN 12235** *(hockey ball)*		27.2	26.3	32.6	**28.7**	**100 – 400 mm**

REPORTED BY

Maxime FAVÉ
Laboratory Technician) - Writer

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

LABORATORY TESTING
PERFORMANCE EVALUATION

Project Information

Project Name	Act Global and Ultra Base Combination Testing Performance Evaluation		
Client Information	Act global 4201 W Parmer Ln Ste B175 Austin, TX 78727		
Date	January 18, 2017	Sample Arrival	January 2017
Report Status	Draft		
Job No.	91758/1845		
Prepared by	*Kieran O'Donnell* *Field Operation Manager*		
Checked by	*Jeffrey Gentile* *Laboratory Director*		

Notes:

1. This report has been prepared by Sports Labs USA with all reasonable skill, care and diligence within the terms of the contract with the Client and within the limitations of the resources devoted to it.

2. This report is confidential to the Client and Sports Labs USA accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known. Any such party relies upon the report at their own risk.

3. This report shall not be used for engineering or contractual purposes unless signed by the Author and the Checker and unless the report status is "Final."

Summary

Sports Labs USA was commissioned to perform laboratory testing for the following characteristics listed below.

- Advanced Artificial Athlete Tests: Force Reduction Vertical Deformation, & Energy Restitution – STC Advanced Artificial Athlete Protocol
- EN 1177- HIC Impact Attenuation (Hemispherical Drop Missile) – EN 1177
- Gmax Impact Attenuation (Flat Faced Drop Missile) – ASTM F355A
- Rotational Resistance – EN15301
- Vertical Ball Rebound

Complete results and background information can be found in the subsequent sections of this report.

Table Contents

System Description

System ID	System Description
KCB 60mm_Sand/CC_UB Blck	35 kg Silica Sand and 9 Kg Clear Choice, 60mm Kya Champ Blend over UltraBase Black
KCB 60mm_Sand/CC_UB_20mm PP	35 kg Silica Sand and 9 Kg Clear Choice, 60mm Kya Champ Blend over UltraBase, 20mm Proplay
KCB 60mm_Sand/CC_UB_23mm PP	35 kg Silica Sand and 9 Kg Clear Choice, 60mm Blend Mono/Slit Film over UltraBase, 20mm Proplay
KCB 60mm_Sand/CC_UB_25mm PP	35 kg Silica Sand and 9 Kg Clear Choice, 60mm Kya Champ Blend over UltraBase, 25mm Proplay
KCB 60mm_Sand/EPDM_UB Blck	35 kg Silica Sand and 9 Kg EPDM, 60mm Kya Champ Blend over UltraBase Black
KCB 60mm_Sand/EPDM_UB_20mm PP	35 kg Silica Sand and 9 Kg EPDM, 60mm Kya Champ Blend over UltraBase, 20mm Proplay
KCB 60mm_Sand/EPDM_UB_23mm PP	35 kg Silica Sand and 9 Kg EPDM, 60mm Kya Champ Blend over UltraBase, 20mm Proplay
KCB 60mm_Sand/EPDM_UB_25mm PP	35 kg Silica Sand and 9 Kg EPDM, 60mm Kya Champ Blend over UltraBase, 25mm Proplay

LABORATORY TESTING
PERFORMANCE EVALUATION

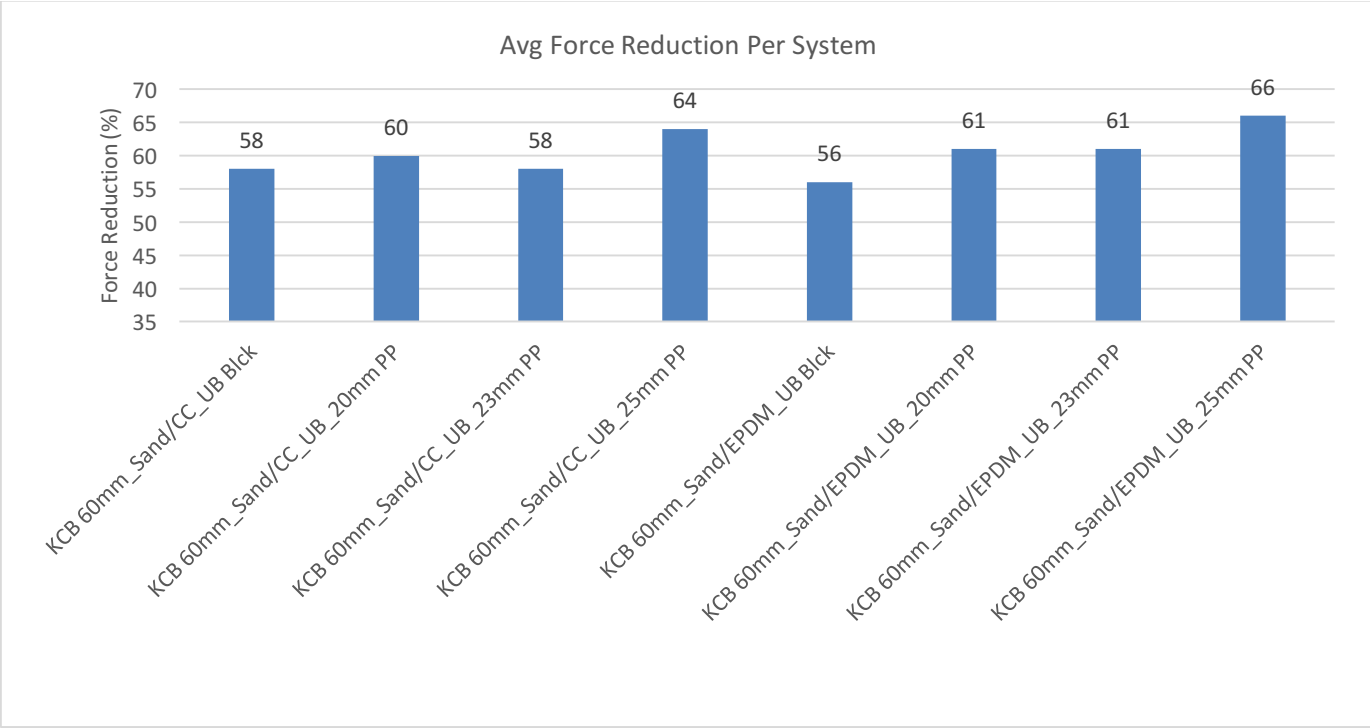
Summary Results Table

System ID	Force Reduction (%)	Vertical Def (mm)	Energy Restit (%)	355A "Flat" Gmax	355A "Flat" HIC	Critical Fall Height (m)	Rotational Resistance	Ball rebound
KCB 60mm_Sand/CC_UB Blck	58	7.7	35	105	268	1.6	37	0.83
KCB 60mm_Sand/CC_UB_20mm PP	60	9.0	40	99	250	1.6	35	0.73
KCB 60mm_Sand/CC_UB_23mm PP	58	7.8	32	95	235	1.5	39	0.74
KCB 60mm_Sand/CC_UB_25mm PP	64	9.3	39	73	166	1.8	36	0.67
KCB 60mm_Sand/EPDM_UB Blck	56	7.1	38	99	252	1.6	38	0.78
KCB 60mm_Sand/EPDM_UB_20mm PP	61	9.3	40	95	238	1.6	41	0.70
KCB 60mm_Sand/EPDM_UB_23mm PP	61	8.4	39	95	242	1.4	41	0.70
KCB 60mm_Sand/EPDM_UB_25mm PP	66	10.0	42	73	168	1.5	38	0.72

LABORATORY TESTING
PERFORMANCE EVALUATION

Force Reduction (Advanced Artificial Athlete)

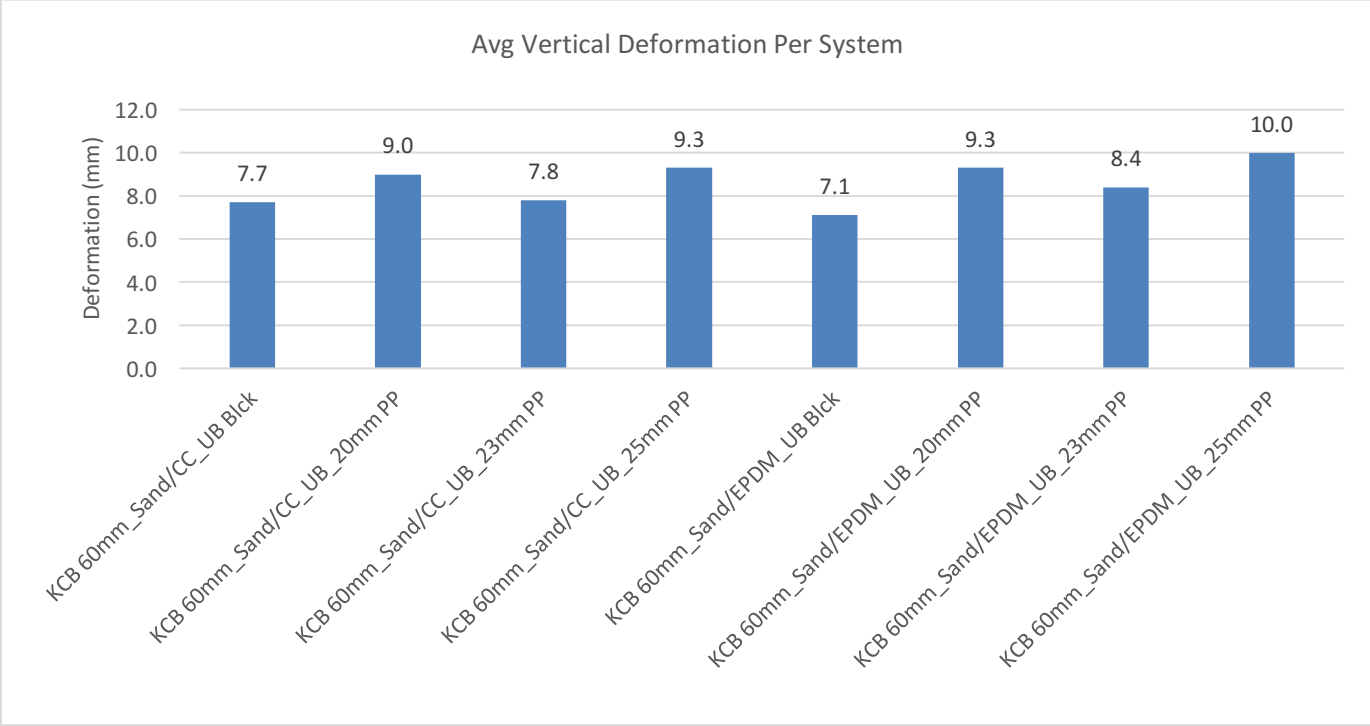
Force Reduction measures the impact absorption provided by surface to a player under foot as they run. A lower value describes a surface that is harder underfoot. The results are compared to the STC performance guidelines of 55% to 70% for a Community Field and 60% to 70% for Stadium Field.



LABORATORY TESTING
PERFORMANCE EVALUATION

Vertical Deformation (Advanced Artificial Athlete)

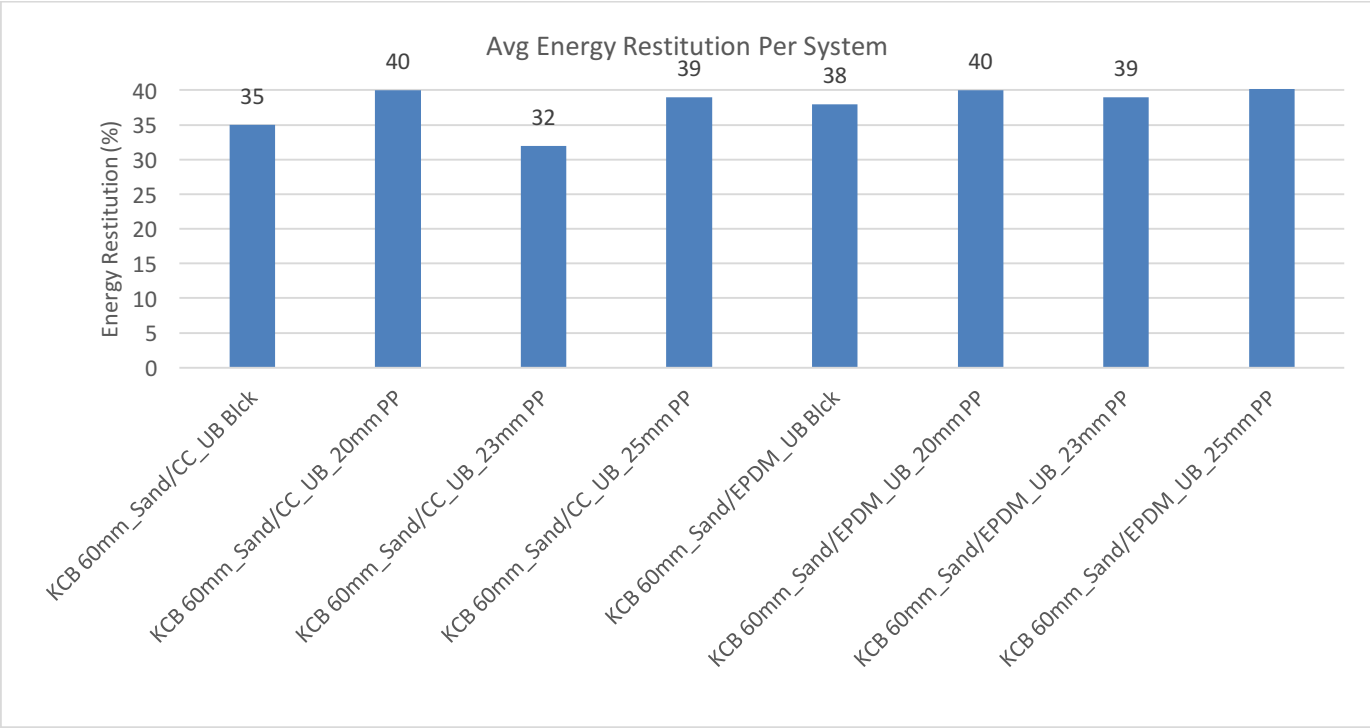
Vertical Deformation measures the amount a surface compresses as an athlete runs across it. This value is often related to speed of play and surface stability. The results are compared to the STC performance guidelines of 4 mm to 11 mm for a Community Field and 4mm to 10mm for Stadium Field. Vertical Deformation typically will reduce over time as a field receives use.



LABORATORY TESTING
PERFORMANCE EVALUATION

Energy Restitution (Advanced Artificial Athlete)

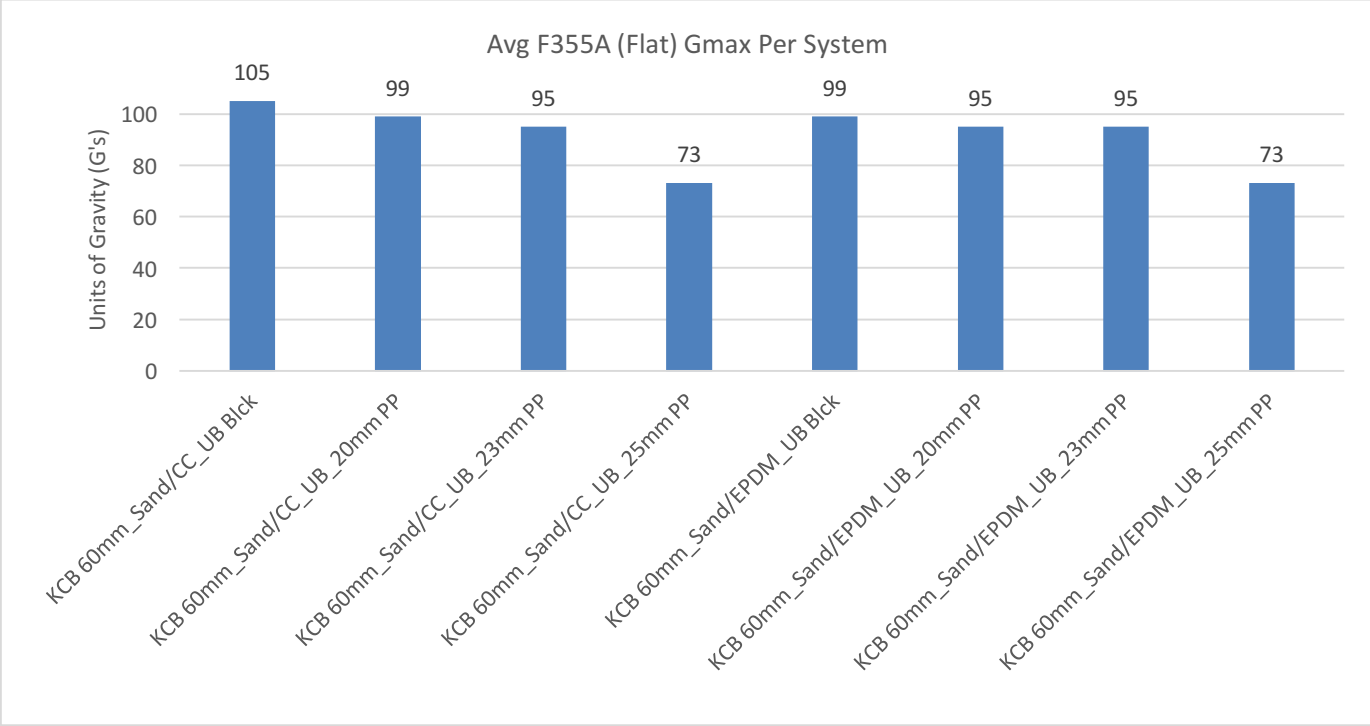
Energy Restitution is defined as the energy returned as a percentage of the energy of applied. This can be thought of as the springiness of the surface. This value relates to the feel underfoot as well as the speed of play. Although this measurement is not a part of the official standard, it is a useful measure. The recommended range is 20% to 50%.



LABORATORY TESTING
PERFORMANCE EVALUATION

ASTM F355A Gmax/HIC Impact Attenuation (Flat Faced Drop Missile)

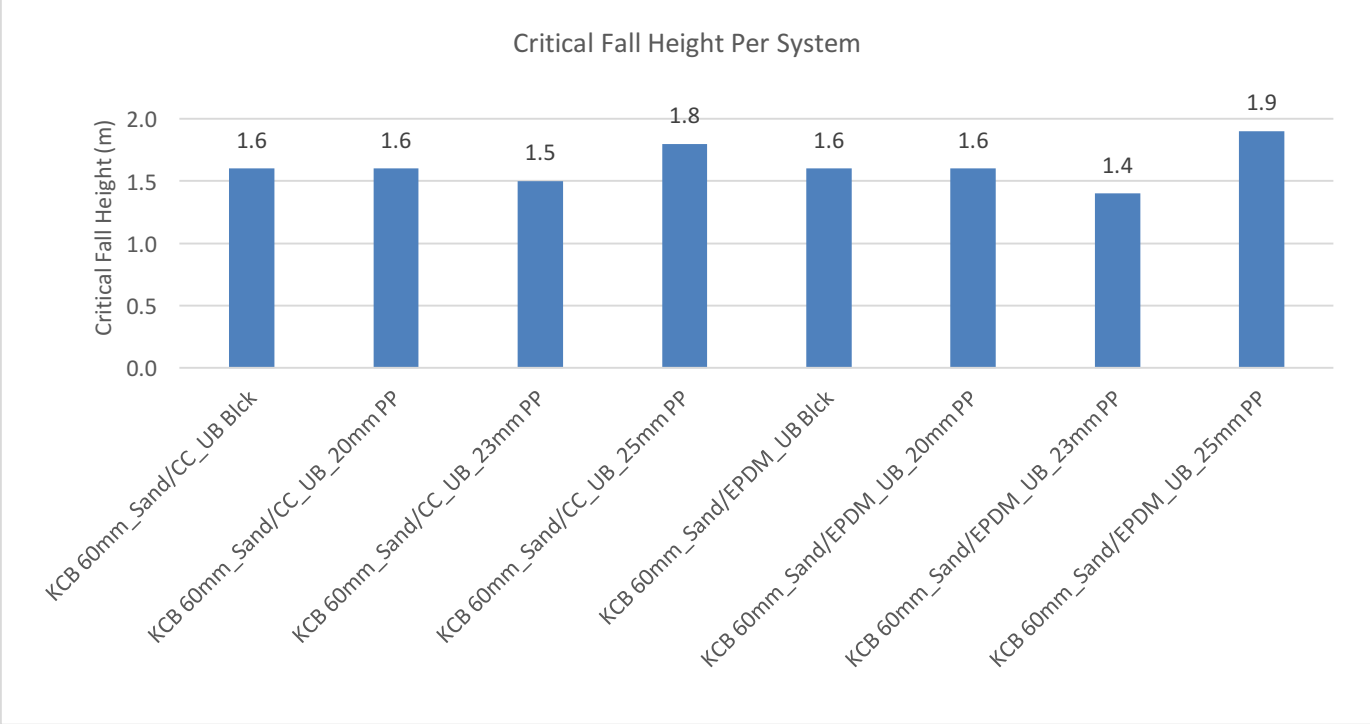
The ASTM F355A Impact Hardness is the official device / method for assessing the hardness of synthetic turf athletic fields. It is used to gauge impact attenuation based on a predetermined head / body impact. This is a 20 Ib “missile” with a tri-axial accelerometer dropped from a height of 24 in. The STC recommends that the Gmax values be less than 165.



LABORATORY TESTING
PERFORMANCE EVALUATION

EN 1177- HIC Impact Attenuation (Hemispherical Drop Missile)

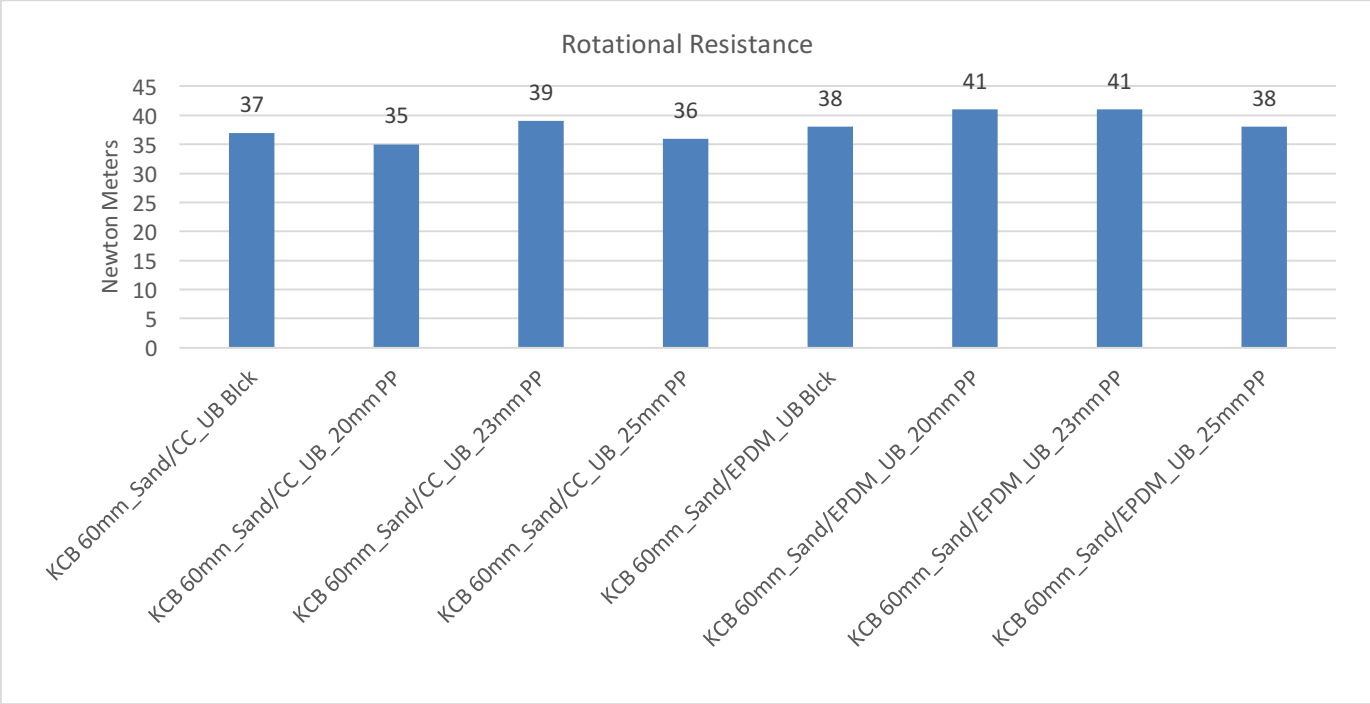
The EN 1177- Impact attenuating play surfacing determination of critical fall height method is similar to the method commonly used for assessing playground surfacing in the United States. Internationally it is the primary method for both synthetic turf and playground surfacing. This device calculates the Head Injury Criteria (HIC). This is used to gauge the probability of head injury potential resulting from a surface impact. This device is a hemispherical 10 Ib “missile” with a tri-axial accelerometer. The hemisphere is dropped from (4) different heights to determine the height at which the HIC would be 1000. This height is referred to as the critical fall height. It is recommended that the critical fall height values be greater than 1.3 meters.



LABORATORY TESTING
PERFORMANCE EVALUATION

Rotational Resistance – EN15301

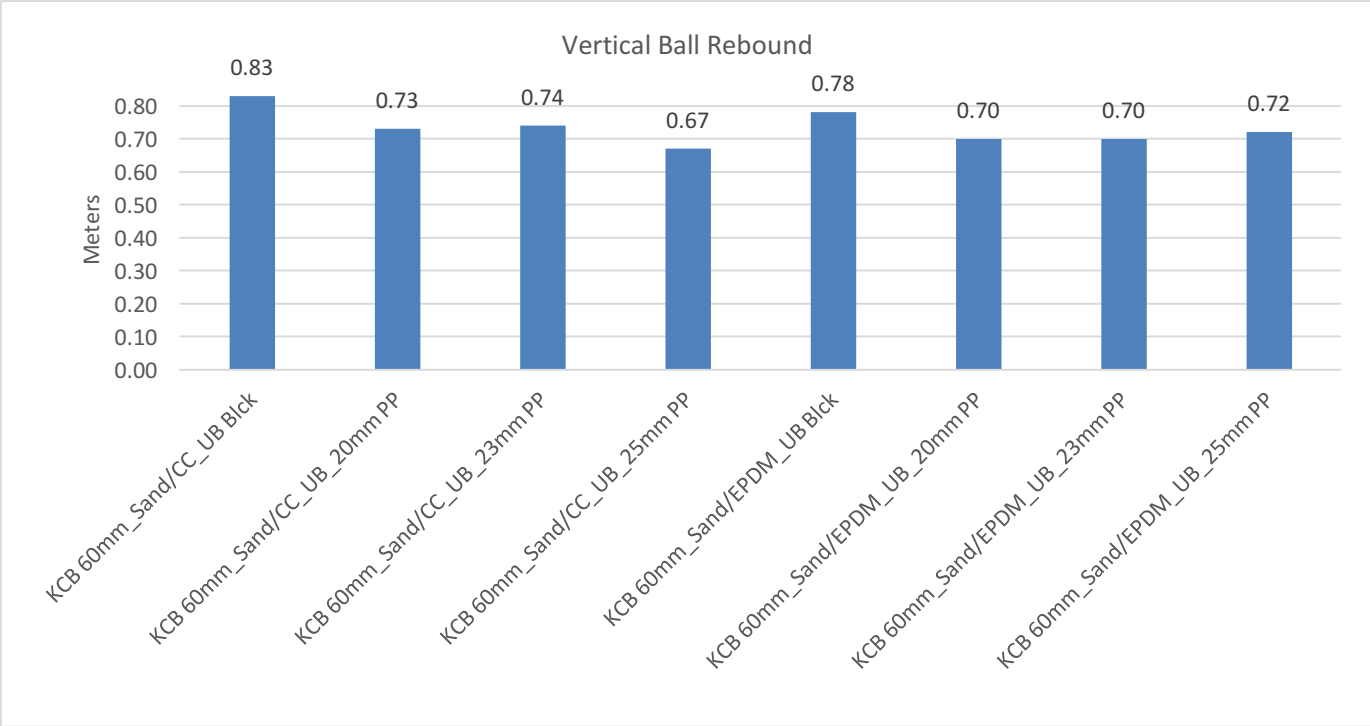
Rotational Resistance measures the interaction between the cleat sole and the surface relating to the ability of a player to change direction. Higher values can relate to a surface that resists the rotation of a foot when a player is changing direction and increase the potential for lower extremity injury. STC guidelines recommend the results being 30n to 45n. The test results can be found in the results table below.



LABORATORY TESTING
PERFORMANCE EVALUATION

Vertical Ball Rebound – EN 12235

Measures how high the ball bounces when falling vertically onto a synthetic turf field. A Ball is released from 2m and the height of its rebound from the surface is calculated. The ball is first calibrated on a level concrete surface to 1.35m. STC recommends from 60cm to 85cm. The test results can be found in the results table below.



End of Report

TEST REPORT

Laboratory test on a shockpad for artificial turf system

Tests performed according to Labosport Internal infill dispersion method *(Splash)*

Report number **R17127US-A2**

Product **UltraBase Panel / Expanded PolyPropylene**

Client **Scott Ford,**
Innovative base Technologies LLC, 5030 Seminole Boulevard, St. Petersburg, FL, 33708

Date **December 28th, 2017**

This report contains 3 pages in total. Reproduction of this report is authorized only in its entire form. Results reported are valid only for the products tested. To declare the conformance (or not), the uncertainty of the results was not taken into account. Detailed results are available upon request.

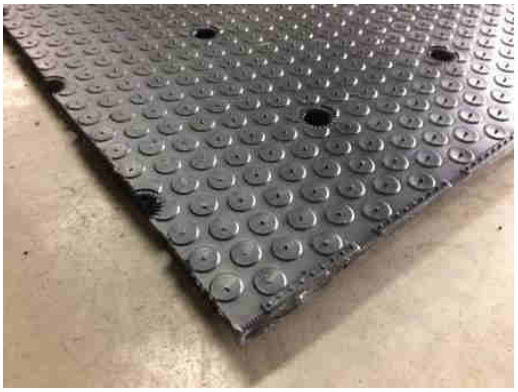
LABOSPORT US
1806 S, Dixie Highway, Dalton, GA 30720, USA
contact@labosport.com ● Tel. 706.529.9474

www.labosport.com

Laboratory test on a shockpad for artificial turf system

INFORMATION

Product description		Shockpad used under artificial turf system filled with sand and rubber			
Product name		*Generic turf*	UltraBase Panel		Expanded PolyPropylene
Sample number		Turf : CAN002667	UBP pad : CAN002824		EPP pad: CAN002822
Date of reception		November 13th, 2017			
Date of the tests		November 2017			
Temperature (°C)		**Min**	23	**Max**	24
Humidity (%)		**Min**	48	**Max**	50
Configuration tested					
Turf pile length		1.8'' *(45 mm)*			
Superior infill layer	SBR rubber	2.2 lb/ft² *(10.5 kg/m²)*			
Inferior infill layer	Silica sand	2.8 lb/ft² *(13.5 kg/m²)*			
Approx. infill depth		1.2'' *(30 mm)*			



UltraBase Panel – face side

Expanded PolyPropylene – face side

45 mm market reference turf system

Turf system over UltraBase panel

Laboratory test on a performance infill for artificial turf

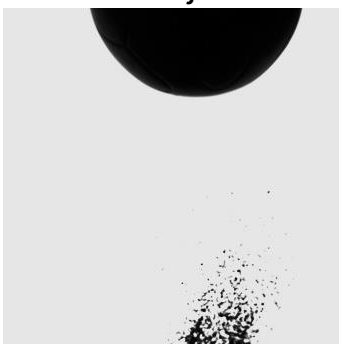
RESULTS

Property	Method	Condition	Units	Result *(average of 5 drops)*	
				Turf over UBP	Turf over EPP
Maximum infill dispersion *(Splash)*	Internal	New – Dry	%	**1.8 %**	**5.5 %**

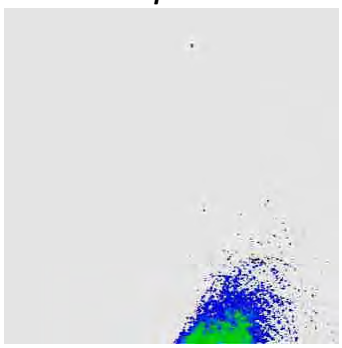
Note: splash raw result expressed for a 2021cm² size image

APPENDIX – SELECTED SPLASH REPRESENTATIONS

Turf over UltraBase Panel - drop 1

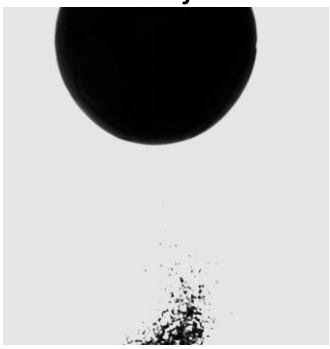


Maximum splash (2.1 %)

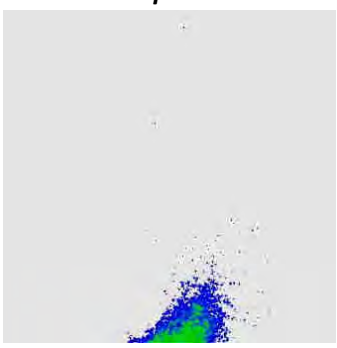


Total splash (over time)

Turf over UltraBase Panel - drop 4

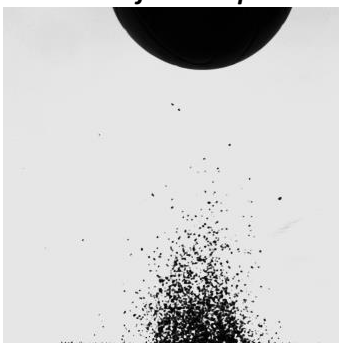


Maximum splash (1.7 %)

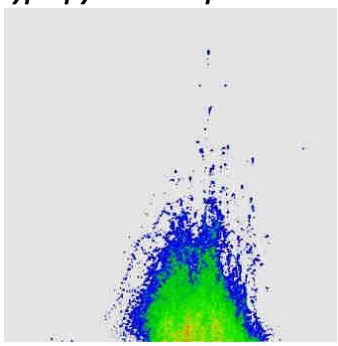


Total splash (over time)

Turf over Expanded Polypropylene - drop 1



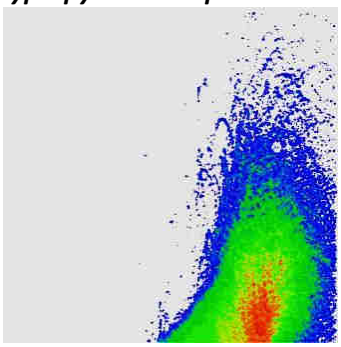
Maximum splash (5.9 %)



Total splash (over time)

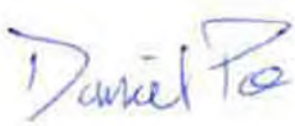
Turf over Expanded Polypropylene - drop 5

Maximum splash (5.3 %)



Total splash (over time)

REPORTED BY



Daniel Po
(Laboratory Technician) - Writer

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

TEST REPORT

CLIENT:

Company:	UltraBase Systems	Report Number:	78204
Address:	5030 Seminole Blvd.	Lab Test Number:	3131-0949-01
	Saint Petersburg, FL 33708	Test Completion Date:	8/9/2019
		Report Date:	8/13/2019
Requested By:	Dave Barlow	Page:	1 of 2

TEST MATERIAL:

Material Type:	Synthetic Turf over base	Date Received:	7/26/2019
Turf ID:	ST343, 1.5" PH, 80 oz	Subbase:	3" #57 Stone
Pad:	UltraBase MAX		

TESTING METHODS REQUESTED:

Testing Services Inc. was instructed by the client to test for the following...			
Standard:	ASTM F1292	Test Method:	Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment

SAMPLING PLAN:

Sampling Date:	8/7/2019

- Specimen sampling is performed in the sampling department at TSI beside the ground level dock door.
- The sampling size of specimens is determined by the test method requirements.
- In the event a specific sampling size is not called for, a determination will be made on previous testing expereince, and approved for use by an authorized manager.
- All samples are subjected to the outside enviromental conditoins of temperature and relative humidity.
- Sample requiring pre-determined exposure to specified environmental condtions based on a specific test method, take place in the departments in which they are tested.

DEVIATION FROM TEST METHOD:

State Reason for any Devation, Additions to, or Exclusions from Test Method
The subbase was deviated from test protocol of concrete and replaced with the above listed subbase at the request of the client.

TEST SUMMARY:

Test Method	Condition		Gmax	HIC	Fall Height
ASTM F1292-17a	Ambient	72°F	136	756	6'
	Hot	120°F	N/A	N/A	N/A
	Frozen	25°F	N/A	N/A	N/A

Full test data reported on page 2 of this report

Critical Fall Height < 200 Gmax < 1000 HIC, Ambient Temp only	6'

→ *Test Equipment: Triax 2015*

Uncertainty:
We undertake all assignments for our clients on a best effort basis. Our findings and

Test Report Approval:

Erle Miles, Jr. VP, Testing Services (TSI) LLC

TSi Accreditation: TSi is a certified independent testing laboratory by the Synthetic Turf Council

817 Showalter Ave
Dalton, GA 30722
(706) 226-1400
tsioffice@optilink.us

TESTING SERVICES

TEST REPORT

CLIENT:

Company:	UltraBase Systems	Report Number:	78204
Address:	5030 Seminole Blvd.	Lab Test Number:	3131-0949-01
	Saint Petersburg, FL 33708	Test Completion Date:	8/9/2019
		Report Date:	8/13/2019
Requested By:	Dave Barlow	Page:	2 of 2

TEST MATERIAL:

Material Type:	Synthetic Turf over base	Date Received:	7/26/2019
Turf ID:	ST343, 1.5" PH, 80 oz	Subbase:	3" #57 Stone
Padding:	UltraBase MAX		

TEST DATA: *(Average is drop 2 & 3, Drop 1 is for conditioniing only)*

CONDITIONS	Drop	Velocity (ft/sec)	Angle	Drop Height	Gmax	HIC
AMBIENT 72° F	1	18.1	5	5'	110	556
	2	18.1	6	5'	114	589
	3	18.2	9	5'	120	615
				AVERAGE Gmax/HIC	117	602
	Drop	Velocity (ft/sec)	Angle	Drop Height	Gmax	HIC
	1	19.8	5	6'	117	627
	2	19.8	8	6'	128	721
	3	19.8	3	6'	144	790
				AVERAGE Gmax/HIC	136	756
	Drop	Velocity (ft/sec)	Angle	Drop Height	Gmax	HIC
	1	21.4	9	7'	167	1092
	2	21.4	9	7'	175	1143
	3	21.4	4	7'	179	1173
				AVERAGE Gmax/HIC	177	1158

end of report, testing only performed at ambient temperatures*

817 Showalter Ave
Dalton, GA 30722
(706) 226-1400
tsioffice@optilink.us

TEST REPORT

CLIENT:

Company:	UltraBase Systems	Report Number:	78205
Address:	5030 Seminole Blvd.	Lab Test Number:	3131-0949-02
	Saint Petersburg, FL 33708	Test Completion Date:	8/9/2019
		Report Date:	8/13/2019
Requested By:	Dave Barlow	Page:	1 of 2

TEST MATERIAL:

Material Type:	Synthetic Turf over base	Date Received:	7/26/2019
Turf ID:	ST343, 1.5" PH, 80 oz	Subbase:	Concrete
Pad:	UltraBase MAX		

TESTING METHODS REQUESTED:

Testing Services Inc. was instructed by the client to test for the following...			
Standard:	ASTM F1292	Test Method:	Standard Specification for Impact Attenuation of Surfacing Materials Within the Use Zone of Playground Equipment

SAMPLING PLAN:

Sampling Date:	8/7/2019

- Specimen sampling is performed in the sampling department at TSI beside the ground level dock door.
- The sampling size of specimens is determined by the test method requirements.
- In the event a specific sampling size is not called for, a determination will be made on previous testing expereince, and approved for use by an authorized manager.
- All samples are subjected to the outside enviromental conditoins of temperature and relative humidity.
- Sample requiring pre-determined exposure to specified environmental condtions based on a specific test method, take place in the departments in which they are tested.

DEVIATION FROM TEST METHOD:

State Reason for any Devation, Additions to, or Exclusions from Test Method
None

TEST SUMMARY:

Test Method	Condition		Gmax	HIC	Fall Height
ASTM F1292-17a	Ambient	72°F	174	977	5'
	Hot	120°F	N/A	N/A	N/A
	Frozen	25°F	N/A	N/A	N/A

Full test data reported on page 2 of this report

Critical Fall Height < 200 Gmax < 1000 HIC, Ambient Temp only	5'

→ *Test Equipment: Triax 2015*

Uncertainty:
We undertake all assignments for our clients on a best effort basis. Our findings and

Test Report Approval:

Erle Miles, Jr. VP, Testing Services (TSI) LLC

TSi Accreditation: TSi is a certified independent testing laboratory by the Synthetic Turf Council

817 Showalter Ave
Dalton, GA 30722
(706) 226-1400
tsioffice@optilink.us

TESTING SERVICES

TEST REPORT

CLIENT:

Company:	UltraBase Systems	Report Number:	78205
Address:	5030 Seminole Blvd.	Lab Test Number:	3131-0949-02
	Saint Petersburg, FL 33708	Test Completion Date:	8/9/2019
		Report Date:	8/13/2019
Requested By:	Dave Barlow	Page:	2 of 2

TEST MATERIAL:

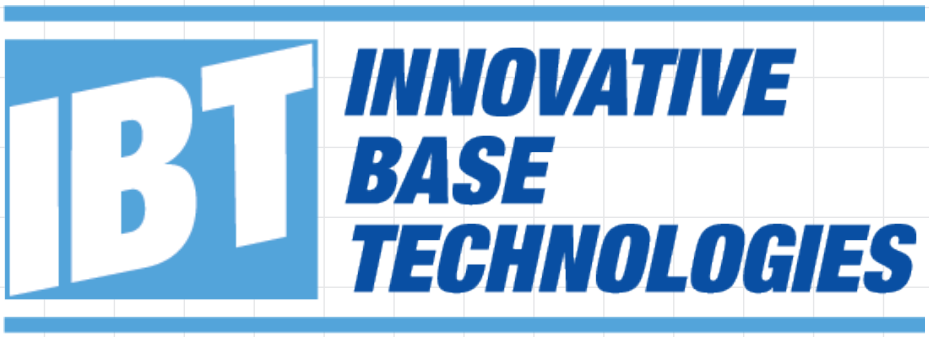
Material Type:	Synthetic Turf over base	Date Received:	7/26/2019
Turf ID:	ST343, 1.5" PH, 80 oz	Subbase:	Concrete
Padding:	UltraBase MAX		

TEST DATA: *(Average is drop 2 & 3, Drop 1 is for conditioniing only)*

CONDITIONS	Drop	Velocity (ft/sec)	Angle	Drop Height	Gmax	HIC
AMBIENT 72° F	1	16.2	6	4'	127	587
	2	16.2	7	4'	136	642
	3	16.2	8	4'	138	658
				AVERAGE Gmax/HIC	137	650
	Drop	Velocity (ft/sec)	Angle	Drop Height	Gmax	HIC
	1	18.1	6	5'	149	816
	2	18.1	6	5'	171	956
	3	18.1	7	5'	176	997
				AVERAGE Gmax/HIC	174	977
	Drop	Velocity (ft/sec)	Angle	Drop Height	Gmax	HIC
	1	19.8	6	6'	195	1264
	2	19.8	3	6'	240	1577
	3	19.8	3	6'	244	1632
				AVERAGE Gmax/HIC	242	1605

end of report, testing only performed at ambient temperatures

817 Showalter Ave
Dalton, GA 30722
(706) 226-1400
tsioffice@optilink.us



BUILDING SMARTER

5030 Seminole Blvd.
Saint Petersburg, FL 33708
P: **727-391-9009** or **866-921-7888**
F: 727-391-9980
www.ultrabasesystems.com
www.tourlinks.net