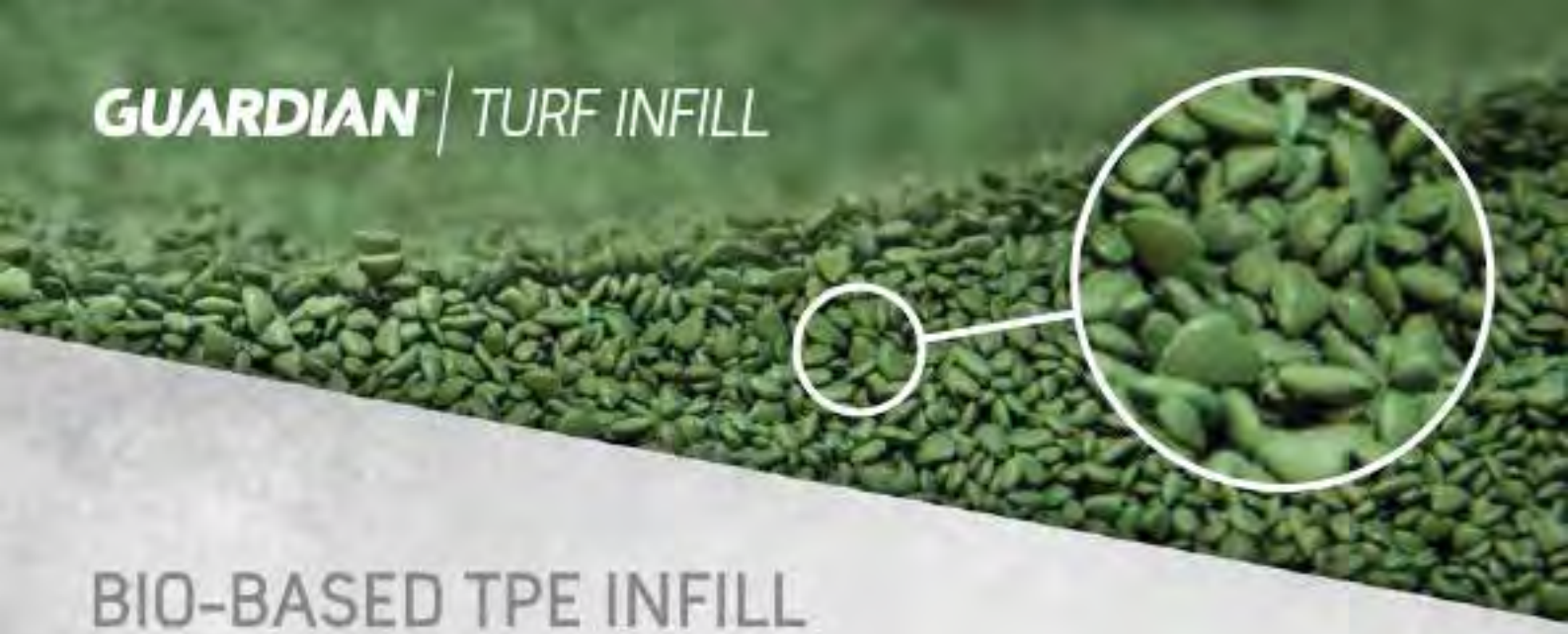
GUARDIAN | *TURF INFILL*



BIO-BASED TPE INFILL

- COOLER SURFACE TEMPERATURE
- WON'T MELT OR FREEZE
- WON'T BREAK DOWN
- PASSES EN 71-3
- CLASS 1 FIRE RATING
- GREAT HIC SCORE
- 1 METER+ CRITICAL FALL HEIGHT
- GREAT ENERGY RESTITUTION
- SUSTAINABLE - 49.68% BIO-CONTENT

LOWEST COST TPE INFILL

ATHLETIC + LANDSCAPE APPLICATIONS | INSTALLED ACROSS US & CANADA

MADE IN USA | 3RD PARTY TESTED | DELIVERED PRICING

SALES@GUARDIANSPORTS.COM • 770-667-6004 • 3044 ADRIATIC COURT, PEACHTREE CORNERS, GA 30071, USA

GUARDIAN™ | TURF INFILL

Guardian Bio-Based TPE Infill Installs

Gen II multi-shaped infill:

Boston College AstroTurf	140 Common Wealth Ave Chestnut Hill, MA 02467
Charles P. Steinmetz High School AstroTurf	3030 N Mobile Ave Chicago, IL 60634
Lakeville South High School AstroTurf	21135 Jacquard Ave Lakeville, MN 55044
Schurz High School AstroTurf – *In Process*	3601 N. Milwaukee Chicago, IL 60641
Lane Tech High School Midwest Sport & Turf	3045 W Addison St. Chicago, IL 60618
Kenwood Academy Midwest Sport & Turf	5015 S Blackstone Ave Chicago, IL 60615
Amundsen High School Midwest Sport & Turf	5110 N Damen Ave Chicago, IL 60625
Saint Ignatius High School The Motz Group	1911 West 30th Street Cleveland, OH 44113
Magnificat High School The Motz Group	20770 Hilliard Boulevard Rocky River, OH 44116
Gilmour Academy The Motz Group	2045 Som Center Road Gates Mills, OH 44040
Laurelhurst Elementary Baez Sports Group	840 NE 41ST Avenue Portland, OR 97232
Rock Church Baez Sports Group	2277 Rosecrans Street San Diego, CA 92106
Park Slope Playground Net Sports Group	40 Lincoln Place Brooklyn, NY 11217
Bialik High School AstroTurf Canada	6500 Kildare Road Côte Saint-Luc, QC H4W 3B8
The Kitchener-Waterloo Bilingual School FieldTurf	600 ERB ST W Waterloo ON N2J 3Z4
Taft High School FieldTurf – *In Process*	175 North Industrial Blvd Calhoun, GA 30701

Gen I uniform infill:

Richmond Hill High School Applied Landscape Technologies	113-14 89th Ave Richmond Hill, NY 11418
Atlanta Athletic Club Playground Direct Sale	1930 Bobby Jones Drive Johns Creek, GA 30097

GUARDIAN™ | TURF INFILL

Guardian Bio-Based TPE Infill Installs

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LABORATORY TESTING PERFORMANCE EVALUATION

Project Information

Project Name	Westlake Sample Lab Testing Combination Testing Performance Evaluation		
Client Information	Axiall, a Westlake Company 210 Industrial Drive N Madison, MS 39110		
Date	December 4, 2017	Sample Arrival	11/8/2017
Report Status	Final		
Job No.	92623/2754		
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
- Infiltration – DIN 18-035
- Pill Burn

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

LABORATORY TESTING
PERFORMANCE EVALUATION

Summary Results Table

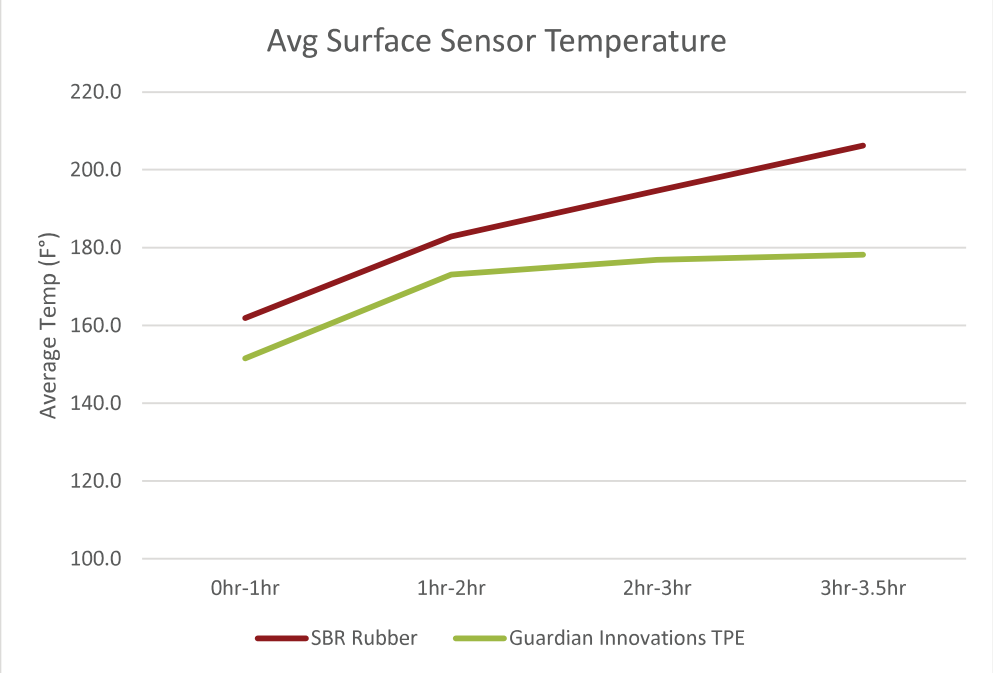
System ID	Force Reduction (%)	Vertical Def (mm)	Energy Restit (%)	355A "Flat" Gmax	355A "Flat" HIC	Critical Fall Height (m)	Rotational Resistance	Ball rebound	Infiltration (in/hr)	Pill Burn PASS/FAIL
Westlake 70/30	59	8.0	26	133	374	1.0	32	0.92	33	PASS

End of Report

LABORATORY TESTING
TEMPERATURE EVALUATION

Comparison Results

Average Surface Sensor Temperature per Time Period			
Average Temperature (F°) per Sensor Type			
Exposure Time Period	SBR Rubber / Sand	Temp Difference (F°)	Guardian Innovations TPE/Sand
0hr-1hr	161.9	10.4	151.6
1hr-2hr	182.9	9.8	173.1
2hr-3hr	194.7	17.8	176.9
3hr-3.5hr	206.3	28.1	178.2



End of Report

LABORATORY TESTING
HEAVY METALS ANALYSIS

Results Table:

Analyte	Analytical Method	*Target Detection Limit (mg/kg)	Sample Detection Limit (SDL) Based Result	PASS / FAIL
Aluminum	NF EN ISO 11885	*70,000*	<2.5 mg/kg	PASS
Antimony	NF EN ISO 11885	*560*	<5 mg/kg	PASS
Arsenic	NF EN ISO 11885	*47*	<5 mg/kg	PASS
Barium	NF EN ISO 11885	*18,750*	<2.5 mg/kg	PASS
Boron	NF EN ISO 17294-1 et 2	*15,000*	<25 mg/kg	PASS
Cadmium	NF EN ISO 11885	*17*	<0.5 mg/kg	PASS
Chromium III	NF EN ISO 11885	*460*	<0.1 mg/kg	PASS
Chromium VI	NF T 90-043	*0.2*	<0.1 mg/kg	PASS
Cobalt	NF EN ISO 11885	*130*	<0.5 mg/kg	PASS
Copper	NF EN ISO 11885	*7,700*	0.75 mg/kg	PASS
Lead	NF EN ISO 11885	*160*	<0.5 mg/kg	PASS
Manganese	NF EN ISO 11885	*15,000*	<0.5 mg/kg	PASS
Mercury	NF EN 13506	*94*	<5 mg/kg	PASS
Nickel	NF EN ISO 11885	*930*	<0.5 mg/kg	PASS
Selenium	NF EN ISO 11885	*460*	<5 mg/kg	PASS
Strontium	NF EN ISO 17294-1 et 2	*56,000*	<0.5 mg/kg	PASS
Soluble Tin (Sn)	NF EN ISO 17294-1 et 2	*180,000*	<2.5 mg/kg	PASS
Soluble Organic Tin	NF EN ISO 17294-1 et 2	*12*	<2.5 mg/kg	PASS
Zinc	NF EN ISO 17294-1 et 2	*46,000*	<2.5 mg/kg	PASS

*Limits per European Standard EN 71-3 – Safety of Toys Part 3: Migration of certain elements.

PRO-TURF LAB
Division of Professional Testing Laboratory, Inc.

TEST REPORT

DATE: 06-21-2018	TEST NUMBER: 0403339

CLIENT	Astro Turf
TEST CONDUCTED	ASTM E648 Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using A Radiant Heat Energy Source, also referenced as NFPA 253 and FTM Standard 372
PRODUCT NAME	RootZone 3D3 Blend 60 oz.
DESCRIPTION OF PRODUCT TESTED	2.5 lbs/sf Sand (Bottom) 3.0 lbs/sf Guardian TPE (Top)

GENERAL PRINCIPLE

This procedure is designed to measure the critical radiant flux at flame out of horizontally mounted floor covering systems exposed to a flaming ignition in a test chamber which provides a graded radiant heat energy environment. The imposed radiant flux simulates the thermal radiation levels likely to impinge on the floors of a building whose upper surfaces are heated by flames from a fully developed fire in an adjacent room or compartment. The test result is an average critical radiant flux (watts/square cm) which indicates the level of radiant heat energy required to sustain flame propagation in the flooring system once it has been ignited. A minimum of three test specimens are tested and the results are averaged. Theoretically, if a room fire does not impose a radiant flux that exceeds this critical level on a corridor floor covering system, flame spread will not occur.

The NFPA Life Safety Code 101 specifies as Class 1 Critical Radiant Flux of .45 watts/sq cm or higher and Class 2 Critical Radiant Flux as .22 - .44 watts/sq cm.

FLOORING SYSTEM ASSEMBLY			
SUBSTRATE	Mineral-Fiber/Cement Board	UNDERLAYMENT	Loose Laid
ADHESIVE	N/A	CONDITIONING	Minimum of 96 hours at 70 ± 5º F and 50 ± 5% relative humidity

	Distance Burned	Time To Flame Out	Critical Radiant Flux
Specimen 1	40 cm	34 minutes	0.48 watts/square cm
Specimen 2	38 cm	29 minutes	0.52 watts/square cm
Specimen 3	41 cm	39 minutes	0.46 watts/square cm

Average Critical Radiant Flux	0.49 Watts/Square Cm
Standard Deviation	0.02 Watts/Square Cm
Coefficient of Variation	5.13 %

** NOTE: Meets or exceeds Class 1 rating as specified in NFPA Life Safety Code 101 and IBC 804.2 Classification.*

APPROVED BY: Gary Calvery

NVLAP®

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GUARDIAN™ | TURF INFILL

TECHNICAL DATA SHEET

Guardian Bio-Based TPE Infill

*Patent Pending

DESCRIPTION/APPLICATION
Guardian TPE Infill is a specialty flexible TPE product formulated for lower field temperatures, high melt (>350°F), softer feel, (nonabrasive, air blown particles) and ideal compaction for athletic performance. Made with natural components from corn and soy.

GENERAL PROPERTIES	VALUE	METHOD
Particle Size (mm)	1.25-3.35	
Particle Shape	Round/Low Sphericity	
Bulk Density (g/cm3)	0.53	
Specific Gravity (+/ - 0.02)	1.05	ASTM D -792 Method B
Hardness Delayed 10 sec, Shore A (+/ - 3)	65	ASTM D -2240

MECHANICAL PROPERTIES	VALUE	METHOD
Tensile Strength, psi	845	ASTM D -638
Elongation, %	265	ASTM D -638
100% Modulus, psi	580	ASTM D -638

RECOMMENDED STOCK TEMPERATURE	< 325°F

Preparation Date : 11/8/2017

WBENC

WOMEN'S BUSINESS ENTERPRISE NATIONAL COUNCIL

JOIN FORCES. SUCCEED TOGETHER.

HEREBY GRANTS
WOMAN OWNED SMALL BUSINESS (WOSB) CERTIFICATION TO

Guardian Innovations, LLC

The identified small business is an eligible WOSB for the WOSB Program, as set forth in 13 C.F.R. part 127 and has been certified as such by an SBA approved Third Party Certifier pursuant to the Third Party Agreement, dated June 30, 2011, and available at www.sba.gov/wosb.

The WOSB Certification expires on the date herein unless there is a change in the SBA's regulation that makes the WOSB ineligible or there is a change in the WOSB that makes the WOSB ineligible. If either occurs, this WOSB Certification is immediately invalid. The WOSB must not misrepresent its certification status to any other party, including any local or State government or contracting official or the Federal government or any of its contracting officials.

NAICS: 423910 UNSPSC: 49161512, 53102900, 72141301
Certification Number: WOSB181313
Expiration Date: September 30, 2019

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