TESTING SERVICES, INC.
817 SHOWALTER AVE. • P.O. BOX 2041
DALTON, GEORGIA 30722-2041
PHONE: (706) 226-1400 • FAX: (706) 226-6118

TEST REPORT

CLIENT:	Blue Sky Turf International	REPORT NUMBER:	47183I
	534 Brighton Way	LAB TEST NUMBER:	2126-1460
	Valley Forge, PA 19460	DATE:	February 25, 2010

TEST MATERIAL:

Turf ID	Infill
UltraFiber G4 M	3.0 lbs/ft^2 SBR Rubber

Test Scope: This test method determines the coefficient of friction (shoe traction) between the athlete's shoes and the playing surface. The shoe traction was calculated from the minimum force required to initiate horizontal movement of the shoe over the surface, a relation to the maximum force an athlete can exert in stopping or turning without slipping. Two forces are measured during testing: the force to initiate motion (coefficient of static friction) and the force to maintain constant velocity (coefficient of dynamic friction).

Test Method: ASTM F1551: Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials: Suffix AT-030: Sports Shoe Traction (Coefficient of Friction) and Traction Differential

Test Equipment:
Shoes: ½" Soccer Size 11 (Weight 1.06 lbs)
Barbell Weight: 25 lbs 11" Diameter
Assembly Weight: 26.06 lbs
Measuring Device: Dillion Force Gauge
Loop Nylon Strap: 1" X 72"

Test Procedure: A barbell weight was placed on top of a sports shoe as directed in the test method. Measurements were made in four directions, each at a 90° angle to the preceding direction of testing. The initial force required for movement as well as the force required for continued movement was measured using a Dillon Model BFG 500N push-pull gauge. An average of each of these forces in each of the four directions was taken and expressed as ST (Shoe Traction), where the force required to move the shoe in a horizontal direction was divided by the weight of the assembly.

Test Data: Tests conducted at TSi Laboratories: 61°F 43% RH

Cleat Type	Surface Condition	Initiate Force (With)	Initiate Force (Transverse)	Initiate Force (Against)	Initiate Force (Transverse)
Soccer	Dry	51.10 lbs/force	42.39 lbs/force	42.85 lbs/force	40.67 lbs/force
Soccer	Dry	36.24 lbs/force	39.77 lbs/force	38.77 lbs/force	34.81 lbs/force
Soccer	Dry	39.68 lbs/force	36.22 lbs/force	37.87 lbs/force	35.67 lbs/force

Cleat Type	Surface Condition	Slide Force (With)	Slide Force (Transverse)	Slide Force (Against)	Slide Force (Transverse)
Soccer	Dry	24.80 lbs/force	24.20 lbs/force	23.90 lbs/force	25.10 lbs/force

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS, THESE LETTERS AND REPORTS ARE FOR THE USE ONLY OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEIR COMMUNICATION TO ANY OTHERS OR THE USE OF THE NAME TESTING SERVICES, Inc. MUST RECEIVE OUR PRIOR WRITTEN APPROVAL. THE REPORTS AND LETTERS, AND OUR NAME, OUR SEALS, OR OUR INSIGNIA ARE NOT UNDER ANY CIRCUMSTANCES TO BE USED IN ADVERTISING TO THE GENERAL PUBLIC.
VISIT OUR WEBSITE AT www.tsiofdalton.com

TESTING SERVICES, INC.
817 SHOWALTER AVE. • P.O. BOX 2041
DALTON, GEORGIA 30722-2041
PHONE: (706) 226-1400 • FAX: (706) 226-6118

Attachment to Report # 47183I

Blue Sky Turf International
534 Brighton Way
Valley Forge, PA 19460

Test Results: Cont'd

Cleat Type	Surface Condition	Initiate Force (With)	Initiate Force (Transverse)	Initiate Force (Against)	Initiate Force (Transverse)
Soccer	Wet	42.54 lbs/force	34.76 lbs/force	37.63 lbs/force	37.10 lbs/force
Soccer	Wet	35.05 lbs/force	33.75 lbs/force	33.48 lbs/force	33.44 lbs/force
Soccer	Wet	37.54 lbs/force	36.59 lbs/force	36.04 lbs/force	35.62 lbs/force

Cleat Type	Surface Condition	Slide Force (With)	Slide Force (Transverse)	Slide Force (Against)	Slide Force (Transverse)
Soccer	Wet	23.60 lbs/force	22.20 lbs/force	22.70 lbs/force	22.50 lbs/force

Test Summary:

Cleat Type	Condition	Average Static COF	Average Dynamic COF
Soccer	Dry	1.50	0.90
Soccer	Wet	1.40	0.90

Approved By:

Erle Miles, Jr VP
Testing Services Inc

OUR LETTERS AND REPORTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS, THESE LETTERS AND REPORTS ARE FOR THE USE ONLY OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEIR COMMUNICATION TO ANY OTHERS OR THE USE OF THE NAME TESTING SERVICES, Inc. MUST RECEIVE OUR PRIOR WRITTEN APPROVAL. THE REPORTS AND LETTERS, AND OUR NAME, OUR SEALS, OR OUR INSIGNIA ARE NOT UNDER ANY CIRCUMSTANCES TO BE USED IN ADVERTISING TO THE GENERAL PUBLIC.
VISIT OUR WEBSITE AT www.tsiofdalton.com