



TESTING SERVICES, INC.
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TEST REPORT

CLIENT:	X-Grass	REPORT NUMBER:	51659
	PO Box 579	LAB TEST NUMBER:	2316-7889
	Rocky Face, GA 30740	DATE:	April 30, 2011
		PAGE:	1 of 2

Test Material: 70 oz Turf

Infill: 2.0 lbs/ft² EnviroFill

Pad: 2" Playground Pad

Tested Dimension: 18" x 18"

Sub Base: 3" Crushed Rock

Impact Location: Center of Test Material

Date of Receipt: April 18, 2011

Testing Period: April 26--28, 2011

Authorization: Lynette Ogle

Test Procedure: The submitted sample was evaluated for Shock Absorbing Properties in Accordance with the procedures outlined in ASTM F 1292-09; Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment. A deviation to this standard was made at the request of the client who instructed Tsi to substitute the above listed sub-base in place of concrete to comply with the client's installation protocol.

Missile: Hemispherical (Triaxial Accelerometer): Total Drop Assembly Weight (46g) 10 lbs

Test Equipment: Triax 2000 Surface Impactor
 Date of Last Calibration: 3/21/2011 by Alpha Automation

Sample Pre-Condition: 50±10 RH, 70F±5F for a minimum of 24 hrs prior to testing

Sample Conditioning: 8 hrs @ each reference temperatures prior to testing

Temperature: Maximum Drop Height That Gives a Gmax of 200 or Less and A HIC of 1000 or less

Ambient, 72°F (23°C) 10'

Hot, 120°F (49°C) 9'

Cold, 25°F (-6°C) 9'

Critical Fall Height (CFH):	9'
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Reference Gmax Curves Included

Prepared and signed by:

Erle Miles, Jr. VP
 Testing Services Inc.



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AMBIENT Sample Condition: Dry Temperature: 70°F (23°C)	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	24.2	2	9'	9.10	122	715	
	2	24.1	7	9'	9.03	131	817	
	3	24.1	7	9'	9.03	136	844	
	Average				Drops 2, 3		134	831
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	25.3	4	10'	9.95	128	863	
	2	25.3	1	10'	9.95	135	917	
	3	25.3	2	10'	9.95	143	967	
	Average				Drops 2, 3		139	942
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	26.5	1	11'	10.91	158	1149	
2	26.6	2	11'	11.00	165	1240		
3	26.6	1	11'	11.00	169	1292		
Average				Drops 2, 3		167	1266	

HOT Sample Condition: Dry Temperature: 120°F (49°C)	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	22.7	1	8'	8.01	119	639	
	2	22.7	3	8'	8.01	121	690	
	3	22.6	1	8'	7.94	125	707	
	Average				Drops 2, 3		123	699
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	24.1	1	9'	9.03	133	803	
	2	24.1	1	9'	9.03	141	889	
	3	24.1	2	9'	9.03	145	923	
	Average				Drops 2, 3		143	906
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	25.3	1	10'	9.95	171	1186	
2	25.3	6	10'	9.95	172	1169		
3	25.3	5	10'	9.95	175	1261		
Average				Drops 2, 3		174	1215	

COLD Sample Condition: Dry Temperature: 25°F (-6°C)	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	22.6	1	8'	7.94	112	650	
	2	22.7	1	8'	8.01	121	723	
	3	22.7	2	8'	8.01	117	678	
	Average				Drops 2, 3		119	701
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	24.0	9	9'	8.95	133	901	
	2	24.0	7	9'	8.95	137	943	
	3	24.0	3	9'	8.95	144	997	
	Average				Drops 2, 3		141	970
	Drop #	Velocity ft/sec	Angle	Drop Ht/Actual	Drop Ht/Theoretical	Gmax	HIC	
	1	25.3	4	10'	9.95	129	840	
2	25.3	6	10'	9.95	142	1021		
3	25.3	5	10'	9.95	140	1017		
Average				Drops 2, 3		141	1019	