

CLIENT:	LTR Products, LLC	REPORT NUMBER:	60733-01
	1251 Waterfront Place #400	LAB TEST NUMBER:	2613-9744
	Pittsburg, PA 15222	DATE:	May 15, 2014

## **TEST MATERIAL:**

Material ID	
Matorial ID	
GroundSmart Rubber Mulch at 4" Compacted Depth	

<u>INTRODUCTION:</u> Testing Services Inc was instructed by the client, to perform ADA wheelchair accessibility

for the above described material being used under and around playground equipment.

TEST METHOD: ASTM F1951-99: Standard Specification for Determination of Accessibility of

Surface Systems Under and Around Playground Equipment

**REQUIREMENT:** A surface in place shall have average work per foot (work per meter) values for

straight propulsion and for turning *less* than the average work per foot (work per meter) values for straight propulsion and for turning, respectively, on a hard, smooth, surface

with a grade of 1:14 (7.1 %).

PROCEDURE: Test Surface Preparation: Tests were conducted on 5/14/14 indoors at TSi Laboratories in an

environment of 79°F and 58% R.H. The rubber mulch was installed in a wooden box (44"W x 117"L). The mulch was loaded into the container box in increments of 2 inches, slightly compacted, repeated until a total of 4" compacted depth was reached. The mulch, prior to testing, was again slightly compacted using a water-filled lawn roller to simulate foot traffic.

<u>Wheelchair/Operator:</u> The wheelchair used in these tests was manufactured by *Invcare*, Model Action Xtra, serial Number 98J84142. This wheelchair is totally adjustable, a necessity for these tests. The pneumatic tires were inflated to 60 psi on the rear and 32 psi on the front. The weight of the wheelchair was 24.25 pounds and the operator's weight was 165 pounds for a total of 189 pounds. The operator's distribution was adjusted to 60% on the rear wheels and 40 % on the front.

<u>Torque Measuring System:</u> A certified *Dillion Electronic Force Gauge*, Model BFG 500N, S/N 98-2277-07 was used as an interface between a *Dell* Laptop and a certified *Dillon Smart Torque Wrench*, S/N 97-0085-01. Software, also from Dillon, logged the load vs. time and integrated the area under the resulting curves. The adapters and accessories needed to attach the instrumentation were fabricated locally. This total package added 10 pounds to the total weight bringing the total to 199 pounds.

## **TEST RESULTS:**

Baseline Straight (Average Work/ft-Force)	Rubber Mulch 4" Compacted Depth (Average Work/ft-Force)
14.33 lbs	13.99 lbs

Baseline Turning (Average Work/ft-Force)	Rubber Mulch 4" Compacted Depth (Average Work/ft-Force)
10.14 lbs	9.22 lbs

<u>CONCLUSION:</u> The above listed material *meets/exceeds* both the straight line and turning propulsion requirements set forth in this test method and therefore, passes the standard.

Erle Miles, Jr V.P., Testing Services Inc

TSi Accreditation: Our laboratory is accredited with US Dept of Commerce, National Institute of Standards and

Technology: ISO/IEC 17025:2005. Our code # is NVLAP 100108-0. However, it should be noted that some or all of the tests performed are not under our scope of accreditation due to the work not fully conforming to the standard, or it being outside the scope of our accreditation, or

fully conforming to the standard, or it being outside the scope of our accreditation, or subcontracted.

Subcontract

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

based on the information to us using the latest test methods available.