



**Sieve Analysis Data Collection Form
ASTM F2075-15 per Section 4.4 and Section 7**

TUV SUD America, Inc
1755 Atlantic Blvd
Auburn Hills, MI 48321
Ph: (616) 546-4601

Customer/Participant: River Valley Mulch, LLC
Main Office Address: 776 Morehead Rd
(City, State, Zip) Flemingsburg, KY 41041
Location ID: Flemingsburg, KY

Test Date: 1/3/2019
Project No.: 72144291-2
Ambient Air Temp.: 20.4°C
Relative Humidity: 23%

Commercial Name of Product: Platinum Safety Chips

Test Equipment Used

<u>TUV Asset No.:</u>	<u>Equipment Type</u>	<u>Manufacturer</u>	<u>Model</u>
PLYP00100	Environmental Chamber	Russells	RB-8-1-1, (QE496)
PLYP00163	Data Logger	Omega	OM-CP-RHTEMP101A
PLYP00071	Hygro-thermometer	Extech Instruments	445702 <input checked="" type="checkbox"/>
PLYP00177	Hygro-thermometer	Extech Instruments	445702 <input type="checkbox"/>
PLYP00055	Test Sieve	W.S. Tyler	No. 16 (1.19 mm)
PLYP00056	Test Sieve	W.S. Tyler	3/8" (9.53 mm)
PLYP00057	Test Sieve	W.S. Tyler	3/4" (19.05 mm)
PLYP00059	Sieve Shaker	W.S. Tyler	RX 812
PLYP00083	Balance	Denver Instruments	18453642

Data

Initial Sample and Container Weight	<u>963.1</u>
Tare weight of Container	<u>211.2</u>
Initial Sample Dry Weight (g)	<u>751.9</u>
Sample and Container Weight for 3/4" Sieve	<u>179.5</u>
Tare weight of Container	<u>179.5</u>
Sample Remaining on 3/4" Sieve (g)	<u>0.0</u>
Sample and Container Weight for 3/8" Sieve	<u>207.2</u>
Tare weight of Container	<u>179.5</u>
Sample Remaining on 3/8" Sieve (g)	<u>27.7</u>
Sample and Container Weight for #16 Sieve	<u>892.8</u>
Tare weight of Container	<u>179.5</u>
Material Remaining on # 16 Sieve (g)	<u>713.3</u>

<u>Sieve Size</u>	<u>Min / Max Requirements</u>	<u>% Passing</u>
3/4" (19.05 mm)	99 - 100%	100.0
3/8" (9.53 mm)	75 - 100%	96.3
No. 16 (0.0469 in.)	0 - 15%	1.4

Sample in compliance with ASTM F2075-15 for Sieve Analysis Section 4.4 per 7.4 Yes No

Tare weights of containers verified prior to testing.

Note: Testing performed at TUV SUD America in Auburn Hills, MI.

Performed By: Dominic Santana Title: Test Technician Date: 1/3/2019
Reviewed By: [Signature] Title: Regional Manager Date: 1/10/2019

The results reported herein reflect the performance of the above described samples at the time of testing and at the temperature(s) reported. The results are specific to the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. The following data sheet provides an accurate representation of the test results.



TUV SUD America Inc. Product Safety Services

1755 Atlantic Blvd., Auburn Hills, MI 48326

Phone: (616) 546-4600

Tramp Metals Test Results - ASTM F2075

ASTM F2075-15

Standard Specification for Engineered Wood Fiber for Use as a Playground Safety Surface Under and Around Playground Equipment, Section 4.6 and Section 9

Customer/Participant: River Valley Mulch, LLC

Report Date: 12/17/18

Main Office Address: 7769 Morehead Road, Flemingsburg, KY 41041

Test Date: 12/17/18

All testing performed at location ID: Flemingsburg, KY

Project No.: 72144291.1

Commercial Name of Product: Platinum Safety Chips

4.6.1 Per 9.4 Tramp Metals

Level - 0" - 15"

<u>Quadrant 1</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 2</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 3</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 4</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Level - 15" - 30"

<u>Quadrant 1</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 2</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 3</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 4</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Level - 30" - 45"

<u>Quadrant 1</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 2</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 3</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 4</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Level - 45" - 60"

<u>Quadrant 1</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 2</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 3</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Quadrant 4</u>	
<u>Pass</u>	<u>Fail</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>

Pass Fail

The results reported herein reflect the performance of the above described samples at the time of testing. The results are specific to the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. This data sheet provides an accurate representation of the test results.

Performed By: Tim Lockstein

Reviewed By: [Signature]

Title: Product Safety Engineer

Title: Regional Manager

Date: 12/17/18

Date: 1/10/2019



TUV SUD America Inc.
 Product Safety Services
 1755 Atlantic Blvd.
 Auburn Hills, MI 48326
 Phone: (616) 546-4600

IPEMA IMPACT ATTENUATION REPORT – ASTM F1292-17A

Participant: River Valley Mulch, LLC
 Main Office Address: 776 Morehead Road
Flemingsburg, KY 41041
 Phone: 606.845.4110
 Manufacturing Location ID: Flemingsburg, KY
 Commercial Name of product: Platinum Safety Chips
 Date of Manufacture: Unknown
 No. of samples submitted: Approx. 8 cu. ft.

TUV Report No.: 72144291-3
 Report Date: 1/4/2019
 Test Date: 1/3/2019
 Selection: Initial:
 Follow up: Ref Job:
 Sample Receipt Date: 1/2/2019
 Ambient Air Temperature: 23.8 °C
 Humidity: 21 %

Test Equipment:

Alpha Automation, Triax, TUV System 5:
 Alpha Automation, Triax, TUV System 4:
 Accelerometer ID: PLYP00144
 Accelerometer Calibration Date: 4/10/2018

Environmental Chamber No.: PLYP00069
 Calibration Due Date: 9/13/2019
 Environmental Chamber No.: PLYP00101
 Calibration Due Date: 9/13/2019

Loose Fill Material Sample Description:

Engineered Wood Fiber: Un-compacted Depth: 14 Inches
 Loose Fill Wood:
 Rubber Nuggets:
 Rubber Buffings:
 Sand: Compacted Depth: 12 Inches
 Gravel:
 Other:

Unitary Sample Description:

Tiles: Total Thickness: _____
 Poured in Place: Top Layer: _____
 Other: Base Layer: _____

Turf System Sample Description:

Turf: Turf Pile Height: _____ Inches
 Pad: Pad Thickness: _____ Inches
 Aggregate: Aggregate: _____ Inches
 Infill: Infill Amount: _____ Lbs./Sq. Ft.
 Infill Type: _____

Comments:

The above described sample was tested at: 12 Ft.

The results reported herein reflect the performance of the above described samples at the time of testing and at the temperature(s) reported. The results are specific to the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. The following data sheet provides an accurate representation of the test results.

Sample in compliance with ASTM F1292-17a at the temperature and rating specified? Yes No

Signature: Dominic Santina Title: Test Technician Date: 1/4/2019

Reviewed by: [Signature] Title: Regional Manager Date: 1/10/2019

Participant: River Valley Mulch, LLC

TUV Report No: 72144291-3

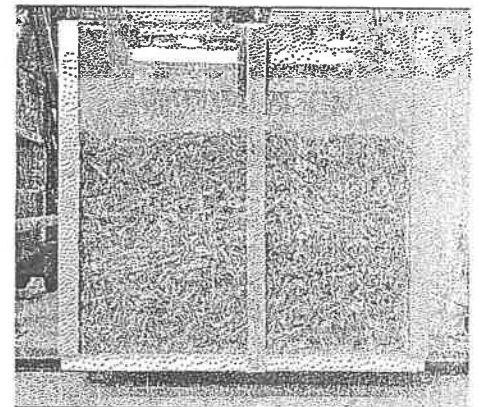
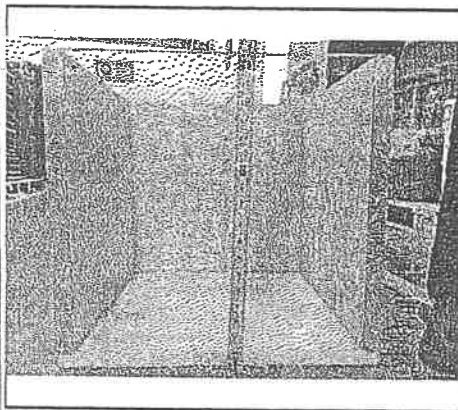
Manufacturing Location ID: Flemingsburg, KY

Test Date: 1/3/2019

Drop	Specified Impact Height (ft.)	Reference Temperature -6°C, (21.2°F)				Reference Temperature 23°C, (73.4°F)				Reference Temperature 49°C, (120.2°F)				
		G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	
1	12	52	217	27.9	12.10	54	213	27.9	12.10	62	218	27.9	12.10	
2	12	77	338	28.0	12.19	77	342	28.2	12.36	82	368	28.1	12.28	
3	12	92	429	28.2	12.36	89	424	28.2	12.36	99	519	28.2	12.36	
Average		84.5	383.5			83.0	383.0			90.5	443.5			
Measured Surface Temperature		-6°C	Max. Change from reference + 5°C, (5°F)				23°C	Max. Change from reference ± 3°C, (5°F)				49°C	Max. Change from reference -3°C, (-5°F)	
Sample Condition:		Frozen				Damp				Dry				

Drop	One foot over (ft.)	Reference Temperature -6°C, (21.2°F)				Reference Temperature 23°C, (73.4°F)				Reference Temperature 49°C, (120.2°F)				
		G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	
1					0.00				0.00				0.00	
2					0.00				0.00				0.00	
3					0.00				0.00				0.00	
Average		0.0	0.0			0.0	0.0			0.0	0.0			
Measured Surface Temperature		°C	Max. Change from reference + 5°C, (5°F)				°C	Max. Change from reference ± 3°C, (5°F)				°C	Max. Change from reference -3°C, (-5°F)	
Sample Condition:														

Drop	One foot under (ft.)	Reference Temperature -6°C, (21.2°F)				Reference Temperature 23°C, (73.4°F)				Reference Temperature 49°C, (120.2°F)				
		G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	
1					0.00				0.00				0.00	
2					0.00				0.00				0.00	
3					0.00				0.00				0.00	
Average		0.0	0.0			0.0	0.0			0.0	0.0			
Measured Surface Temperature		°C	Max. Change from reference + 5°C, (5°F)				°C	Max. Change from reference ± 3°C, (5°F)				°C	Max. Change from reference -3°C, (-5°F)	
Sample Condition:														



TUV America Inc.
1755 Atlantic Blvd.
Auburn Hills, MI 48326

Phone: (616) 546-4600
E-mail: info@tuvam.com
www.TUVamerica.com



Hazardous Metals Test ASTM F2075, Section 4.5.2 per 8.0

Manufacturer: River Valley Mulch, LLC

Main Office Address: 776 Morehead Road, Flemingburg, KY 41041

Manufacturing Location ID: Flemingburg, KY

Commercial Name of Product: Platinum Safety Chips

PURCHASE ORDER: # 2000034242

PROJECT NO.: 72144291-4

The following ISO 17025-accredited Laboratory performed testing:

St. Louis Testing Laboratories, Incorporated
2810 Clark Avenue
St. Louis, MO 63103

St. Louis Testing Laboratory report attached (1 page).

Test Result: Pass

Fail

Prepared By:

Sabrina Nagvi

1/10/2019

Date

Project Coordinator

Title

Reviewed and Approved By:

[Signature]

1/10/2019

Date

Regional Manager

Title

The results reported herein reflect the performance of the above described samples at the time of testing. The results are specific to the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. This data sheet provides an accurate representation of the test results.



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085
 Chemical, Metallurgical, Mechanical, Nondestructive, Environmental Testing, Analyses and Field Service.

TUV SUD AMERICA, INC
 1755 Atlantic Blvd.
 Auburn Hills, MI 48326

January 10, 2019
 Lab No. 19C-0025
 Invoice No. 251660
 P.O. No. 200034242
 Page 1 of 1

Attention: Tim Fouchia

REPORT OF ANALYSIS

MATERIAL: 72144291-4
SUBJECT: Soluble Heavy Metals Analysis
STANDARD: ASTM F2075-15, Section 4.5.2-per 8.0 Hazardous Metal Test Method
TEST METHOD: ASTM F2075-15
UNITS: Soluble Heavy Metals - Parts per Million (ppm)
RESULTS:

Substance	72144291-4	Maximum Allowable Limit	Method Detection Limit
Soluble Antimony	<5	60	5
Soluble Arsenic	<5	25	5
Soluble Barium	47	1000	5
Soluble Cadmium	<5	75	5
Soluble Chromium	51	60	5
Soluble Lead	<5	90	5
Soluble Mercury	<5	60	5
Soluble Selenium	<5	500	5

The soluble heavy metal content of the tested product is in compliance with the requirements of the above-indicated standard.

Identification of tested specimen provided by the client.


 Jacob W. Long, Manager
 Chemical Testing



Testing Cert. No. 0397-01
 Testing Cert. No. 0307-02

AN OFFICIAL COPY OF TEST REPORT WILL BE PROVIDED BY THIS LABORATORY ON REQUEST.
 NOT OFFICIAL WITHOUT THE RAISED SEAL OF ST. LOUIS TESTING LABORATORIES, INC.
 SEE REVERSE FOR CONDITIONS.





TEST REPORT

CLIENT:

Company:	River Valley Mulch / Old Glory Resources	Report Number:	77251
Address:	7562 Morehead Road	Lab Test Number:	3102-9845
	Flemingsburg, KY 41041	Test Completion Date:	4/17/2019
		Report Date:	4/17/2019
		Page:	1 of 2
Requested By:	Bob Pille		

TEST MATERIAL:

Material Type:	Wood Chips	Date Received:	4/4/2019
Material Condition:	EXCELLENT: XXX GOOD:	POOR:	REJECTED:
Mulch Identification	Playground Safety Chips		
Tested Depth:	9"		

TESTING METHODS REQUESTED:

Testing Services, Inc was instructed by the client to perform the following testing..			
Standard:	ASTM F1951-14	Test Method:	Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment

SAMPLING PLAN:

Sampling Date:	4/4/2019
<ul style="list-style-type: none"> • Specimen sampling is performed in the sampling department at TSI. • 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 based on previous testing experience, and approved for use by an authorized manager. • All samples are subjected to the outside environmental conditions of temperature and relative humidity. • Sample requiring pre-determined exposure to specified environmental conditions based on a specific test method, take place in the departments in which they are tested 	

DEVIATION FROM TEST METHOD:

State reason for any Deviation from, Additions to, or Exclusions From Test Method.
None

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 4/17/2019 indoors at TSi Laboratories in an environment of 65°F and 39% R.H. The mulch was installed in a wooden box (44"W x 117"L). The system, prior to testing, was slightly compacted using a Brinly 18" X 24" water-filled lawn roller, filled with 28 gallons of water, applying 270 lbs to simulate foot traffic, every 2" to the specified compacted depth of 9".

Wheelchair/Operator: 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 is 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.

Torque Measuring System: A certified *Dillon Electronic Force Gauge*, Model BFG 500N, S/N 98-2277-07 was used as an interface between a *Dell* Laptop and a calibrated *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.

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. OUR REPORTS, LETTERS, NAME, SEALS, OR INSIGNIA ARE NOT UNDER ANY CIRCUMSTANCES TO BE USED IN ADVERTISING TO THE GENERAL PUBLIC.

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



TEST REPORT

CLIENT:

Company:	River Valley Mulch / Old Glory Resources	Report Number:	77251
Address:	7562 Morehead Road	Lab Test Number:	3102-9845
	Flemingsburg, KY 41041	Test Completion Date:	4/17/2019
		Report Date:	4/17/2019
		Page:	2 of 2
Requested By:	Bob Pille		

TEST MATERIAL:

Material Type:	Wood Chips	Date Received:	4/4/2019
Material Condition:	EXCELLENT: XXX GOOD:	POOR:	REJECTED:
Mulch Identification	Playground Safety Chips		
Tested Depth:	9"		

TEST SUMMARY:

TEST METHOD	Maximum Requirements – Average Work/ft-Force	TEST RESULTS – Average Work/ft-Force
ASTM F1951-99	Baseline Straight: 13.54 lbs	11.51 lbs
	Baseline Turning: 9.45 lbs	8.49 lbs

Straight Propulsion	1	2	3	4	5
Circumference of Rear Wheel	75.375"	75.375"	75.375"	75.375"	75.375"
Area	41.3312 ft ² lbs*s	44.8008 ft ² lbs*s	41.3720 ft ² lbs*s	42.2328 ft ² lbs*s	44.2403 ft ² lbs*s
Time	7.00 seconds	7.25 seconds	7.80 seconds	7.75 seconds	7.50 seconds
Distance	79.0 inches	79.0 inches	79.0 inches	79.0 inches	79.0 inches
Distance	6.58 ft	6.58 ft	6.58 ft	6.58 ft	6.58 ft
Angular Displacement (radians)	6.59 rad	6.59 rad	6.59 rad	6.59 rad	6.59 rad
Average Torque (energy)	5.90 ft lbs	6.18 ft lbs	5.30 ft lbs	5.45 ft lbs	5.90 ft lbs
Total Work (energy)	77.77 ft lbs	81.39 ft lbs	69.86 ft lbs	71.77 ft lbs	77.69 ft lbs
Work/ft (force)	11.81 lbs	12.36 lbs	10.61 lbs	10.90 lbs	11.80 lbs
Drop Hi/Low Work/ft (force)	11.81 lbs			10.90 lbs	11.80 lbs
Average Work/ft (force)			11.51 lbs		

Turning Propulsion	1	2	3	4	5
Circumference of Rear Wheel	75.375"	75.375"	75.375"	75.375"	75.375"
Distance from Pivot Point to Outer Wheel	35.75 inches	35.75 inches	35.75 inches	35.75 inches	35.75 inches
Area	64.6858 ft ² lbs*s	64.6457 ft ² lbs*s	63.4825 ft ² lbs*s	60.2819 ft ² lbs*s	64.0197 ft ² lbs*s
Time	7.10 seconds	7.18 seconds	7.75 seconds	7.42 seconds	7.75 seconds
Angle Traveled (degrees)	93.0°	93.0°	93.0°	93.0°	93.0°
Angle Traveled (radians)	1.62 rad	1.62 rad	1.62 rad	1.62 rad	1.62 rad
Arc Length Traveled by Outer Wheel	58.03 inches	58.03 inches	58.03 inches	58.03 inches	58.03 inches
Arc Length Traveled by Outer Wheel	4.84 ft	4.84 ft	4.84 ft	4.84 ft	4.84 ft
Angular Displacement of Outer Wheel (radians)	4.84 rad	4.84 rad	4.84 rad	4.84 rad	4.84 rad
Average Torque (energy)	9.11 ft lbs	9.00 ft lbs	8.19 ft lbs	8.12 ft lbs	8.26 ft lbs
Total Work (energy)	44.07 ft lbs	43.55 ft lbs	39.62 ft lbs	39.30 ft lbs	39.96 ft lbs
Work/ft (force)	9.11 lbs	9.01 lbs	8.19 lbs	8.13 lbs	8.26 lbs
Drop Hi/Low Work/ft (force)		9.01 lbs	8.19 lbs		8.26 lbs
Average Work/ft (force)			8.49 lbs		

CONCLUSION:

The above listed material *meets/exceeds* both the straight line and turning propulsion requirements set forth in this test, where the surface tested average work per foot value was less than the average work per foot value verses a hard, smooth surface with a grade of 7.1%

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. TSI can only ensure the test results for the specific items tested. Unless otherwise noted in the deviations sections of this report, all tests performed are in compliance with stated test method.

Test Report Approval:

Eric Miles, III, Lab Director, Testing Services (TSI) LLC

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. OUR REPORTS, LETTERS, NAME, SEALS, OR INSIGNIA ARE NOT UNDER ANY CIRCUMSTANCES TO BE USED IN ADVERTISING TO THE GENERAL PUBLIC.

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Dalton, GA 30722
(706) 226-1400
tsioffice@optilink.us**