



**REPORT NUMBER**  
**72154113**



**America**

**PREPARED FOR**  
RUBBERECYCLE, LLC  
1985 RUTGERS UNIVERSITY BLVD.  
LAKEWOOD, NJ 08701

**ATTENTION**  
JEROMY MORNINGSTAR

**PO#**  
N/A

**REPORT DATE**  
OCTOBER 17, 2019

**TÜV SÜD America, Inc.**  
1755 Atlantic Blvd.  
Auburn Hills, MI 48326  
Phone: 616.546.4600  
Fax: 248.393.6994  
[www.TUVAmerica.com](http://www.TUVAmerica.com)

TÜV SÜD America, Inc. letters, reports and data are for the exclusive use of our customers to whom they are addressed and shall not be reproduced, except in full, without the written approval of the Laboratory. Our letters and reports apply only to those samples tested, and are not necessarily indicative of the qualities of apparent identical or similar products. Samples not destroyed in testing are retained for a maximum of thirty (30) days. The use of the name TÜV SÜD America, Inc. or its Seal or Insignia, are not permitted to be used by the customer on their communications, brochures, advertising, reports or other forms of media, without prior written approval. Reported test parameters are generally specified as set points of testing equipment. All documentation and data utilized in the generation of this report are available upon request.



---

**REPORTED / APPROVED BY:**

**TÜV SÜD America, Inc.**

A handwritten signature in black ink, appearing to read 'Timothy Fouchia', written in a cursive style.

Reported by: Timothy Fouchia, Project Coordinator  
CERTIFICATION TEST PROGRAMS

A handwritten signature in black ink, appearing to read 'David Splane', written in a cursive style.

Approved by: David Splane, Regional Manager  
CERTIFICATION TEST PROGRAMS



---

## PURPOSE

The purpose of this test report is to present the test results obtained during the performance of a test program. This report includes a brief description of the samples presented for test, a list of the documents presented as test instructions, and a summary of the testing performed and the results obtained. Applicable requirements and conclusions are based on the criteria provided by our client, or as specified in the reference document(s).

## WORK REQUESTED / REFERENCE DOCUMENT(s)

Perform testing in accordance with ASTM F1951-14, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

## TEST SEQUENCE

1. Wheelchair work measurement method – straight propulsion with no material on a flat surface with a grade of 7.1%.
2. Wheelchair work measurement method – straight propulsion with material and no grade.
3. Wheelchair work measurement method – turning 90° with no material on a flat surface with a grade of 7.1%.
4. Wheelchair work measurement method – turning 90° with material and no grade.

Testing was performed October 17, 2019.

## SAMPLE DESCRIPTION

Rubberecycle, LLC, submitted approximately twenty (20) cubic feet of loose fill rubber playground surfacing material, as well as three (3) pieces of 1.5in. x 56in. x 39in. Rubberbond EPDM top cap. System identified by customer as Rubberbond.



---

## TESTING PERFORMED

### ACCESSIBILITY OF SURFACE SYSTEMS

#### Procedure

Loose fill rubber material was installed at a 3.5in. depth, per Customer instructions, and left uncompacted. Rubberbond EPDM material sections were then installed side by side over the loose fill rubber material (see attached photos, Appendix B). The sample material was tested, propelling the wheelchair with four even propulsion strokes, per trial, across the material 5.56 feet, within eight seconds. This process was repeated five times for each test, (straight and 90° turn).

Per ASTM F1951-14, section 5.1, no additional modification occurred between propulsion trials.

#### Results

The average work force over one foot, in pound force-inch values, for straight propulsion and for turning with material surface in place, shall be less than the average work per foot values for straight propulsion and for turning, respectively, on a hard, smooth, surface with a grade of 7.1%  $\pm$  2% (1:14).

Discard the high and low work per foot values and average the remaining three trials to determine the average work per foot required to negotiate the test surface and the hard, smooth surface with a grade of 7.1%  $\pm$  2% (1:14).

#### Conclusion

The average work force over one foot, in pound force-inch values, measured **less** when propelling the wheelchair over the Rubberbond playground surfacing system than when propelling the wheelchair over a flat surface with a grade of 7.1%.

The material **met** the requirements of ASTM F1951-14.

#### Sample Disposition

The sample material will be retained by TÜV SÜD America, Inc., for fifteen (15) days, then disposed of at the discretion of TÜV SÜD America, Inc., unless otherwise requested by Rubberecycle, LLC.



## TEST EQUIPMENT

TÜV SÜD America, Inc.'s calibration system meets the requirements of ISO 17025.

TÜV ID	Description	Manufacturer	Model	Calibration Due
PLYP00043	Signal Conditioner	Daytronics	3370	04/20
PLYP00047	Reaction Torque Sensor	Lebow	2110220500	04/20
PLYP00015	Digital Protractor	Mitutoyo	Pro 360	05/20
PLYP00151	Wheelchair	Quickie	Q2	NCR
PLYP00187	Penetration Thermocouple	Omega	88311E	03/20
PLYP00186	Digital Thermometer	Fluke	51-II	03/20
PLYP00152	Accessibility Fixture	DTL	N/A	NCR
AE326	Digital Scale	AND	HW-100KVWP	08/20
PLYP00145	Air Pressure Gauge	Westward	2HKX9	05/20
PLYP00071	Hygro-thermometer	Extech Instruments	445702	04/20
PLYP00195	Tape Measure	Stanley	33-725	08/21

NCR – No Calibration Required

## REMARKS

- Per ASTM F1951-14, section 7.1.2 Test Wheelchair Rider; a 165 + 11, -4.4lbs., test wheelchair rider shall propel the wheelchair during testing. The rider's weight was measured at 181lbs prior to testing.
  - The wheelchair rider weight was 181lbs, which combined with the wheelchair for a total of 229.7lbs.
  - The wheelchair rider weight of 181lbs deviates from the standard, however, the total system weight falls within parameters.

Per section 7.1.3 Weight of Total System - The total weight of the wheelchair Rider System, including any distance measurement or data acquisition equipment residing on the wheelchair shall be a minimum of 187.2lbs and a maximum of 255lbs.

**Appendix A – Test Data**

**Appendix B – Photos**



Appendix A – Test Data



Wheelchair Accessibility Data Sheet  
ASTM F1951

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

Test Date: 10/17/2019

Surface Temperature: 22.5°C

Project No.: 72154113

Ambient Temperature: 22.6°C

Customer: Rubbecycle, LLC

Ambient Humidity: 28%

Commercial Name of Product: Rubberbond

Run #	No Material (work per foot) (lbf-in)	With Material (work per foot) (lbf-in)
Straight Run 1:	134.327	56.557
Straight Run 2:	133.514	52.564
Straight Run 3:	134.119	53.910
Straight Run 4:	130.078	53.11
Straight Run 5:	133.967	50.071
<b>Average:</b>	133.867	53.194
Turn Run 1:	153.025	68.733
Turn Run 2:	176.458	53.769
Turn Run 3:	166.047	60.425
Turn Run 4:	168.481	58.958
Turn Run 5:	169.612	58.1714
<b>Average:</b>	168.047	59.171

Wheelchair Rider Weight: 181 lbs.

Wheelchair tire pressures checked/confirmed:

**Results are specific to the samples described above.**

Appendix B – Photos

