

REPORT NUMBER 72130639



PREPARED FOR

PLAISTED COMPANIES, INC. 11555 205^{TH} AVE. NW ELK RIVER, MN 55330

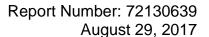
ATTENTION KERRY GLADER

CUSTOMER PURCHASE ORDER NUMBER KERRY81617

REPORT DATE AUGUST 29, 2017

TÜV SÜD America, Inc.

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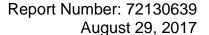
REPORTED / APPROVED BY:

TÜV SÜD America, Inc.

Reported by: Raymond Majszak, Project Coordinator

CERTIFICATION TEST PROGRAMS

David Splane, Regional Manager CERTIFICATION TEST PROGRAMS Approved by:





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)

ASTM F1292-17 – Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.

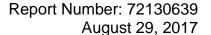
TEST SEQUENCE

Testing was performed on August 28 and 29, 2017.

SAMPLE DESCRIPTION

Plaisted Companies, Inc. submitted approximately 60 gallons of loose fill sand material, identified by Plaisted Companies, Inc. as USGA Bunker Sand.

TÜV SÜD America, Inc.





TESTING PERFORMED

IMPACT ATTENUATION

Procedure

Sample material, USGA Bunker Sand, 18-inch compacted depth, was tested at an eight (8) foot impact height, at temperatures -6°C, 23°C, and 49°C. An impact test consists of three (3) impacts at the same impact site, at each temperature and height. Calculate the average HIC and G-max values using the second and third impact data.

Requirements

ASTM F1292-17, using an average of the last two (2) of three (3) impacts, no value shall exceed 200 G-max or 1000 HIC.

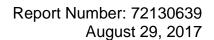
Conclusion

The sample material, 18-inch compacted depth USGA Bunker Sand, **met** the requirements of ASTM F1292-17 at an eight (8) foot impact height.

SAMPLE DISPOSITION

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

TÜV SÜD America, Inc.





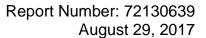
TEST EQUIPMENT

TÜV SÜD America, Inc.'s calibration system meets the requirements of ISO 17025:2005.

TÜV ID	Description	Manufacturer	Model	Calibration Due
PLYP00167	Surface Impact Tester	Alpha Automation	Triax 2015	Verified prior to use
PLYP00117	Tri-axial accelerometer	Dytran	3014M2	03/18
PLYP00168	Reference Pad	Alpha Automation	N/A	NCR
PLYP00169	Hemispherical Missile	Alpha Automation	Per figure 1	05/21
PLYP00065	Micro P Display	Unimeasure	MR-0-JR-2MV13	12/17
PLYP00066	Pancake Load Cell	Sensotec	BL114DL30A	12/17
PLYP00080	Surveyors Rod	CST	06-813	9/17
PLYP00069	Environmental Chamber	Russels	RB-8-1-1	09/17
PLYP00101	Environmental Chamber	Thermotron	F-40-CHV-LN2	09/17
PLYP00141	Stopwatch/Hygrometer	Extech Instruments	HW30	01/17

NCR - No Calibration Required

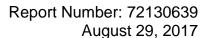
APPENDICES: Appendix A: Test Data (2 pages)





IPEMA IMPACT ATTENUATION REPORT - ASTM F1292-17

Participant: Plaisted Companies, Main Office Address: 11555 205th Ave. NV Elk River, MN 55330 Phone: (763) 633-6571 Manufacturing Location ID: Unknown Commercial Name of product: USGA Bunker Sand Date of Manufacture: Unknown No. of samples submitted: Approx. 60 gallons	V	TUV Report No.: 72130639 Report Date: 8/29/2017 Test Date: 8/28/2017 & 8/29/2017 Selection: ☐ Initial: ☐ Ref Job: Sample Receipt Date: 8/22/2017 Ambient Air Temperature: 23.4 °c Humidity: 40 %			
No. of samples submitted: Approx. 60 qallons Humidity:40 % Test Equipment:					
Alpha Automation, Triax, TUV System 5:	<u>163€ Eq</u>	Environmental Chamber No.: PLYP00101			
Alpha Automation, Triax, TUV System 4:		Calibration Due Date: 9/26/2017			
Accelerometer ID: PLYP00117		Environmental Chamber No.: PLYP00069			
Accelerometer Calibration Date: 3	3/31/2017	Calibration Due Date: 9/26/2017			
Loose Fill Material Sample Description:					
Engineered Wood Fiber: Loose Fill Wood: Rubber Nuggets: Rubber Buffings: Sand:		Un-compacted Depth: 19 Inches Compacted Depth: 18 Inches			
Gravel: Other: Tiles: Poured in Place:	Unitary Samp	Total Thickness: Top Layer:			
Other:		Base Layer:			
Turf System Sample Description:					
Turf:		Turf Pile Height: Inches			
Pad:		Pad Thickness: Inches			
Aggregate:		Aggregate: Inches			
Infill:	\Box	Infill Amount: Lbs./Sq. Ft.			
		Infill Type:			
Comments:		<i>"</i>			
The above described sample was tested at: 8 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 F1292-17 at the temperature and rating specified? Yes Verification.					





Participant: Plaisted Companies, Inc. TUV Report No: 72130639 Test Date: 8/28/2017 & 8/29/2017 Manufacturing Location ID: Unknown Reference Temperature -6°C, (21.2°F) Reference Temperature 23°C, (73.4°F) Reference Temperature 49°C, (120.2°F) Specified Theoretical Theoretical Theoretical Drop Impact Height Velocity Velocity Velocity G-Max HIC HIC HIC Drop Height G-Max Drop Height G-Max Drop Height (Ft.) (ft/s) (ft/s) (ft/s) (ft.) (ft.) (ft.) 22.8 22.7 8.01 22.8 8.08 8.08 8 84 285 36 32 37 70 22.9 23.0 8.15 8.22 23.0 23.1 615 23.2 23.2 8 159 180 8.37 55 135 8.22 112 8.37 8.30 81 169 8 185 818 61 142 172.0 86.5 161.0 68.0 152.0 716.5 Max. Change from reference + 5°C, Max. Change from reference \pm 3°C, Max. Change from reference 23°C Measured Surface Temperature -6°C 49°C (5°F) (5°F) -3°C, (-5°F) Froze Damp Dry Sample Condition: