



REPORT NUMBER
72130639



America

PREPARED FOR
PLAISTED COMPANIES, INC.
11555 205TH 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.

A handwritten signature in black ink, appearing to read 'RM', with a long horizontal flourish extending to the right.

Reported by: Raymond Majszak, Project Coordinator
CERTIFICATION TEST PROGRAMS

A handwritten signature in black ink, appearing to read 'DS', with a long horizontal flourish extending to the right.

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)

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.



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.



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, Inc.
Main Office Address: 11555 205th Ave. NW
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

TUV Report No.: 72130639
Report Date: 8/29/2017
Test Date: 8/28/2017 & 8/29/2017
Initial:
Follow up: Ref Job:
Sample Receipt Date: 8/22/2017
Ambient Air Temperature: 23.4 °c
Humidity: 40 %

Selection:

Test Equipment:

Alpha Automation, Triax, TUV System 5:
Alpha Automation, Triax, TUV System 4:
Accelerometer ID: PLYP00117
Accelerometer Calibration Date: 3/31/2017

Environmental Chamber No.: PLYP00101
Calibration Due Date: 9/26/2017
Environmental Chamber No.: PLYP00069
Calibration Due Date: 9/26/2017

Loose Fill Material Sample Description:

Engineered Wood Fiber:
Loose Fill Wood:
Rubber Nuggets:
Rubber Buffings:
Sand:
Gravel:
Other:

Un-compacted Depth: 19 Inches
Compacted Depth: 18 Inches

Unitary Sample Description:

Tiles:
Poured in Place:
Other:

Total Thickness: _____
Top Layer: _____
Base Layer: _____

Turf System Sample Description:

Turf:
Pad:
Aggregate:
Infill:

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

Comments:

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 No



Participant: <u>Plaisted Companies, Inc.</u>		TUV Report No: <u>72130639</u>											
Manufacturing Location ID: <u>Unknown</u>		Test Date: <u>8/28/2017 & 8/29/2017</u>											
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	8	84	285	22.8	8.08	36	32	22.7	8.01	37	70	22.8	8.08
2	8	159	615	22.9	8.15	112	180	23.2	8.37	55	135	23.0	8.22
3	8	185	818	23.0	8.22	61	142	23.2	8.37	81	169	23.1	8.30
Average		172.0	716.5			86.5	161.0			68.0	152.0		
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:		Froze				Damp				Dry			