

TÜV SÜD America Inc. Product Safety Services 1755 Atlantic Blvd. Auburn Hills, MI 48326

Phone: (616) 546-4600

<u>IPEMA Impact Attenuation Report – ASTM F1292-22</u>

Participant: Polyloom dba Tenca Main Office Address: 1131 Broadway St.	te Grass	TUV Report No.: <u>72186757-2a</u> Report Date: 2/07/2023
Dayton, TN 37321 Phone: 423.413.7028 Manufacturing Location ID: Dayton, TN		Test Date: 2/07/2023 Selection: Initial: 7 Follow up Ref Job:
Commercial Name of product: Diamond Pro (C000 Date of Manufacture: Unknown)068-69)	Sample Receipt Date: 1/27/2023 Ambient Air Temperature: 25.1 °C
No. of samples submitted: See Comments	Te	Humidity: 24 % est Equipment:
Alpha Automation, Triax, TUV System 5:		Environmental Chamber No.:PLYP00069
Alpha Automation, Triax, TUV System 7:	<u> </u>	Calibration Due Date: 8/30/2023
Accelerometer ID:	_	Environmental Chamber No.: AE-029
Accelerometer Calibration Date:	7/18/2022	Calibration Due Date: 8/30/2023
<u>Loo</u>	se Fill Ma	nterial Sample Description:
Engineered Wood Fiber:		Un-compacted Depth:Inches
Loose Fill Wood:		
Rubber Nuggets:		
Rubber Buffings:		
Sand: □		Compacted Depth:Inches
Gravel: □		
Other:		
_	<u>Unitary</u>	Sample Description:
Tiles:		Total Thickness:
Poured in Place:		Top Layer:
Other:		Base Layer:
-	Furf Syste	em Sample Description:
Turf:	7	Turf Pile Height: 1.9375 Inches
Pad:	<u> </u>	Pad Thickness: 2.0 Inches
Aggregate:	✓	Aggregate: 4.0 Inches
Infill:	V	Infill Amount: 2.0 Lbs./Sq. Ft.
Comments:		Infill Type: envirofill
		e (55) 2.0 inch center pads, twenty seven (27) 2.0 inch seamed pads, twenty seven (27) 2.0 inch intersection pad, and 150lbs infill. mesh) – over 2.0 inch Tiger Playground Pad – overlaying 4in. of compacted aggregate. Total system depth/thickness of 7.9375in.
The maximum critical fall height of the above described sample v	was determin	<u>ed to be:</u> 9 Ft.
		ed samples at the time of testing and at the temperature(s) reported. The results are specific sely match the described samples will perform differently. The following data sheet provides
Sample in compliance with ASTM F1292-22 at the temper	ature and r	ating specified? Yes ✓ No ☐
Signature: 7im Lockstein		Title: Project Engineering Technician Date: 2/07/2023
Signature: 7im Lockstein Reviewed by: Timethy Fuli		Title: Project Engineering Technician Date: 2/22/2023

Participant: Polyloom dba Tencate Grass TUV Report No: 72186757-2a

Manufacturing Location ID: Dayton, TN Test Date: 2/07/2023

	Critical	Refe	rence Tempe	rature -4°C, (25°F)	Refe	erence Tempe	rature 23°C, (73°F)	Refe	ence Temper	ature 49°C, (1	120°F)	
Drop	Fall Height (Ft.)	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	9	126	957	24.2	9.10	124	811	24.3	9.18	133	809	24.2	9.10	
2	9	126	899 24.3 9.18			140	950	24.3	9.18	148	981	24.3	9.18	
3	9	127	903	24.3	9.18	151 1024 24.3 9.18			9.18	160	1016	24.3	9.18	
Ave	rage	126.5	901.0			145.5 987.0				154.0	998.5			
Measured Surfa	ce Temperature	-4°C Max. Change from reference + 5°C, (5°F)			erence + 5°C,	23°C	Max. Cha	ange from refe (5°F)	erence + 3°C,	49°C	Max.	Change from -3°C, (-5°I		
Sample C	ondition:		Dry				Dry				Dry			

	1	D. C		. 100 (2.50E)	D.C.	TD.	2200	720E)	ъ.с	TD.	1000 (100000
		Refe	erence Tempe	rature -4°C, (Refe	rence Tempe	rature 23°C, (Refe	ence Temper	ature 49°C, (
Drop	One foot over (Ft.)	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	10	129	930	25.6	10.19	128	922	25.5	10.11	139	926	25.6	10.19
2	10	136	997 25.6 10.19			133	945	25.5	10.11	180	1272	25.6	10.19
3	10	136	1006	25.5	10.11	144 999 25.5 10.11				179	1310	25.6	10.19
Aver	age	136.0	1001.5			138.5	972.0			179.5	1291.0		
Measured Surface Temperature -4°C Max. Change from reference + 5°C, (5°F)					erence + 5°C,	23°C	Max. Cha	ange from refe (5°F)	erence + 3°C,	49°C	Max.	Change from -3°C, (-5°I	
Sample Condition: Dry						Dry				Dry			

		Refe	erence Tempe	rature -4°C, ((25°F)	Refe	rence Tempe	rature 23°C, (73°F)	Refe	ence Temper	ature 49°C, (120°F)
Drop	One foot under (Ft.)	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	113	715	22.9	8.15	114	678	22.8	8.08	106	614	22.9	8.15
2	8	122	773	22.9	8.15	113	647	22.9	8.15	117	694	22.9	8.15
3	8	119	774	22.9	8.15	124	744	22.9	8.15	129	783	22.9	8.15
Avei	rage	120.5	773.5			118.5	118.5 695.5				738.5		
Measured Surfa	ce Temperature	-4°C Max. Change from reference + 5°C, (5°F)			erence + 5°C,	23°C	Max. Cha	ange from refo (5°F)	erence + 3°C,	49°C	Max.	Change from -3°C, (-5°l	
Sample Condition: Dry								Ory		Dry			











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Product Safety Services 1755 Atlantic Blvd. Auburn Hills, MI 48326

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IPEMA Surfacing Material Report - Least Favorable Impact Location - ASTM F1292-22

Least Favorable Impact Location was determined at: Center Turf/Intersection Pad 23°C		
Alpha Automation, Triax, TUV System 5:	Main Office Address: 1131 Broadway St. Dayton, TN 37321 Phone: 423.413.7028 Manufacturing Location ID: Dayton, TN Commercial Name of Product: Diamond Pro (C000068-69) Date of Manufacture: unknown	Report Date:2/7/2023 Test Date:2/7/2023 Selection: Initial Test: Follow up Test: Ref Job: Sample Receipt Date:1/27/2023 Ambient Air Temperature:24.4°C
Accelerometer ID_PLYP00226 Accelerometer Calibration Date: 7/18/2022 Calibration Due Date 8/30/2023 Calibration Due Date 8/30/2023 Environmental Chamber No. AE-029	Test Eq	uipment:
Accelerometer ID_PLYP00226 Accelerometer Calibration Date: 7/18/2022 Calibration Due Date 8/30/2023 Calibration Due Date 8/30/2023 Environmental Chamber No. AE-029	Alpha Automation, Triax, TUV System 5:	Environmental Chamber No.:PLYP00069
Accelerometer ID:PLYP00228		Calibration Due Date 8/30/2023
Unitary Sample Layer Description: Titles:	-	Environmental Chamber No.:AE-029
Titles: Total Thickness: 7,9375in. Poured in Place: Top Layer: See Comments Total Thickness: 7,9375in. Top Layer: See Comments Other: Determine Least Favorable Impact Location: The highest percentage (%) of maximum allowable value, based on g-max or HIC, as tested at the locations indicated on Pages 2 and 3. Least Favorable Impact Location: Reference Temperature: Center Turf/Intersection Pad Least Favorable Impact Location: Reference Temperature: Center Turf/Intersection Pad Determine Least Favorable Impact Location: Reference Temperature: Center Turf/Intersection Pad Determine Least Favorable Impact Location: Reference Temperature: Center Turf/Intersection Pad Determine Least Favorable Impact Location: Reference Temperature: Center Turf/Intersection Pad Determine Least Favorable Impact Location: Center Intersection Pad Center Turf/Intersection Pad Center Turf/Inter	Accelerometer Calibration Date:7/18/2022	Calibration Due Date 8/30/2023
Poured in Place:	Unitary Sample I	_ayer Description:
Poured in Place: Top Layer: See Comments Top Layer: See Comments	Tiles:	Total Thickness: 7 0375in
Turf: Base Layer: See Comments Other:	Poured in Place:	
Determine Least Favorable Impact Location: The highest percentage (%) of maximum allowable value, based on g-max or HIC, as tested at the locations indicated on Pages 2 and 3. Least Favorable Impact Location:	Turf: 🗸	· ,
1.) Samples tested in laboratory environment, overlying poured concrete floor. 2.0 Calculate the average g-max and HIC scores by averaging results from the second and third impacts. 3.) After Least Favorable Impact Location is determined at 23°C, remaining testing will be completed at temperatures 49°C and -6°C at that location. 4.) Customer submitted: eighteen (18) whole pieces of turf; twenty two (22) seamed pieces of turf; fifty five (55) 2.0 inch center pads, twenty seven (27) 2.0 inch seamed pads, twenty seven (27 2.0 inch intersection pad, and 150lbs infill. 5.) Diamond Pro (1.9375in. Pile Height)— infilled with 2.0 lbs per sq. ft. of envirofill infill (grain size #12/20 mesh) – over 2.0 inch Tiger Playground Pad – overlaying 4in. of compacted aggregate 6.) Determine Critical Fall Height Report is 72186757-2a. The above described sample was tested at: 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 specitoto the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. The following data sheet provide an accurate representation of the test results. Sample in compliance with ASTM F1292-22 at the temperature and rating specified? Title: Project Engineering Technician Date: 2/07/2023	at the locations indicated on Pages 2 and 3. Impact Location: Least Favorable Impact Location was determined at: Center Turf/Intersection	Reference Temperature:
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 specito the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. The following data sheet provide an accurate representation of the test results. Sample in compliance with ASTM F1292-22 at the temperature and rating specified? Yes No Signature: Project Engineering Technician Date: 2/07/2023	 Samples tested in laboratory environment, overlying poured concrete floor. Calculate the average g-max and HIC scores by averaging results from the second and third impacts. After Least Favorable Impact Location is determined at 23°C, remaining testing will be completed at tempe Customer submitted: eighteen (18) whole pieces of turf; twenty two (22) seamed pieces of tur 2.0 inch intersection pad, and 150lbs infill. Diamond Pro (1.9375in. Pile Height) infilled with 2.0 lbs per sq. ft. of envirofill infill (grain size 	rf, fifty five (55) 2.0 inch center pads, twenty seven (27) 2.0 inch seamed pads, twenty seven (27)
to the described samples. Samples of surfacing materials that do not closely match the described samples will perform differently. The following data sheet provide an accurate representation of the test results. Sample in compliance with ASTM F1292-22 at the temperature and rating specified? Yes No No Signature: Title: Project Engineering Technician Date: 2/07/2023	The above described sample was tested a	<u>t:</u> 9 <u>Ft.</u>
7im Lockstein Signature: Title: Project Engineering Technician Date: 2/07/2023	to the described samples. Samples of surfacing materials that do not closely mate	
	Sample in compliance with ASTM F1292-22 at the temperature and rating sp	ecified? Yes 🗸 No 🗌
Reviewed by: Title: Project Engineering Technician Date: 2/22/2023	Signature: Title: Project	ct Engineering Technician Date: 2/07/2023
	Reviewed by: Title: Project	ct Engineering Technician Date: 2/22/2023

Participant: Polyloom dba Tencate Grass	Project No.: <u>72186757-2b</u>
Manufacturing Location ID: Dayton, TN	Test Date: <u>2/7/2023</u>

Impact Location: Center Turf/Center Pad

	Specified	Refe	erence Temper	ature -4°C, (25	5°F)	Refere	nce Temperati	are 23°C, (73°	F)	Reference	Temperature	49°C, (120°I	F)
Drop	Impact Height (Ft.)	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	9				0.00	132	897	24.3	9.18				0.00
2	9		0.00			133	884	24.3	9.18				0.00
3	9			0.00			989	24.3	9.18				0.00
Aver	age	0.0	0.0			139.5	936.5			0.0	0.0		
Measured Surface	ce Temperature	°C	°C Max. Change from reference + 5°C, (5°F)			23°C	Max. Cha	nge from refer (±5°F)	ence + 3°C,	°C	Max.	Change from a -3°C, (-5°F	
Sample C	ondition:	DRY			D	RY			D	RY			
Perce	ercentage (%) of maximum allowable values (g-max and HIC):			C):	G-Max:	69.8%	HIC:	93.7%					

Impact Location: Center Turf/Seam Pad

													
	Specified	Refe	rence Temper	ature -4°C, (25	5°F)	Refere	nce Temperati	are 23°C, (73°	F)	Reference	Temperature	e 49°C, (120°I	F)
Drop	Impact Height (Ft.)	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	9				0.00	119	834	24.3	9.18				0.00
2	9		0.00			137	945	24.3	9.18				0.00
3	9		0.00			141	991	24.3	9.18				0.00
Aver	age	0.0	0.0			139.0	139.0 968.0				0.0		
Measured Surfac	Measured Surface Temperature °C Max. Change from reference + 5°C, (5°F)				rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max.	Change from a -3°C, (-5°F	
Sample Condition: DRY						D	RY				RY	,	
Perce	Percentage (%) of maximum allowable values (g-max and HIC):					G-Max:	69.5%	HIC:	96.8%				

Impact Location: Center Turf/Intersection Pad

	Reference Temperature -4°C, (25°F)									• • • • • • • • • • • • • • • • • • • •	•		
	Specified	Refe	erence Temper	ature -4°C, (2:	5°F)	Refere	nce Temperat	ure 23°C, (73°	'F)	Reference	e Temperature	e 49°C, (120°l	F)
Drop	Impact Height (Ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)
1	9	126	957	24.2	9.10	124	811	24.3	9.18	133	809	24.2	9.10
2	9	126	899 24.3 9.18			140	950	24.3	9.18	148	981	24.3	9.18
3	9	127	903 24.3 9.18			151	1024	24.3	9.18	160	1016	24.3	9.18
Avei	age	126.5	901.0			145.5	987.0			154.0	998.5		
Measured Surface Temperature -4°C Max. Change from reference + 5°C, (5°F)			rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence + 3°C,	49°C	Max.	Change from : -3°C, (-5°F			
Sample Condition: DRY					С	RY				RY			
Perce	Percentage (%) of maximum allowable values (g-max and HIC):				C):	G-Max:	72.8%	HIC:	98.7%				





Participant: Polyloom dba Tencate Grass

Project No.: 72186757-2b

 $\label{eq:manufacturing Location ID: Dayton, TN} \ \, \text{Manufacturing Location ID: Dayton, TN}$

Test Date: 2/7/2023

Impact Location: Seam Turf/Center Pad

							1						
	Specified	Refe	erence Temper	ature -4°C, (25	5°F)	Refere	nce Temperat	ure 23°C, (73°	F)	Reference	e Temperature	e 49°C, (120°I	(3)
Drop	Impact Height (Ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)
1	9				0.00	120	871	24.2	9.10				0.00
2	9		0.00			130	917	24.3	9.18				0.00
3	9				0.00	136	978	24.3	9.18				0.00
Ave	age	0.0	0.0			133.0	947.5			0.0	0.0		
Measured Surface Temperature °C Max. Change from reference + 5°C, (5°F)			rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max.	Change from a -3°C, (-5°F			
Sample C	Sample Condition: DRY						RY				RY		
Perce	Percentage (%) of maximum allowable values (g-max and HIC):				C):	G-Max:	66.5%	HIC:	94.8%				

Impact Location: Seam Turf/Seam Pad

1	Reference Temperature -4°C, (25)									Reference Temperature 49°C, (120°F)			
	Specified	Refe	erence Temper	ature -4°C, (25	5°F)	Referei	nce Temperat	ure 23°C, (73°	F)	Reference	e Temperature	e 49°C, (120°l	F)
Drop	Impact Height (Ft.)	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	9				0.00	125	907	24.3	9.18				0.00
2	9		0.00			142	1032	24.3	9.18				0.00
3	9		0.00		0.00	128	920	24.3	9.18				0.00
Aver	age	0.0	0.0			135.0	976.0			0.0	0.0		
Measured Surfac	ured Surface Temperature °C Max. Change from reference + 5°C, (5°F)		rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max.	Change from -3°C, (-5°F			
Sample C	Sample Condition: DRY						RY				RY		
Percentage (%) of maximum allowable values (g-max and HIC):				C):	G-Max:	67.5%	HIC:	97.6%					

Impact Location: Seam Turf/Intersection Pad

	D. C												
	Specified	Refe	erence Temper	ature -4°C, (25	5°F)	Refere	nce Temperat	ure 23°C, (73°	'F)	Reference	e Temperature	e 49°C, (120°I	F)
Drop	Impact Height (Ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)
1	9	·			0.00	113	780	24.2	9.10				0.00
2	9		0.00			123	847	24.3	9.18				0.00
3	9	·			0.00	127	880	24.2	9.10				0.00
Avei	rage	0.0	0.0			125.0	863.5			0.0	0.0		
Measured Surfa	easured Surface Temperature °C Max. Change from reference + 5°C, (5°F)		rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence + 3°C,	°C	Max.	Change from a -3°C, (-5°F			
Sample Condition: DRY						RY				RY			
Perce	Percentage (%) of maximum allowable values (g-max and HIC):				C):	G-Max:	62.5%	HIC:	86.4%				











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Phone: (616) 546-4600

<u>IPEMA Impact Attenuation Report – ASTM F1292-22</u>

Participant: Polyloom dba Tencate (Grass	TUV Rep	oort No.: <u>72186757-7a</u>
Main Office Address: 1131 Broadway St.			ort Date: 2/16/2023
Dayton, TN 37321 Phone: 423.413.7028		Selection: ☐	st Date: <u>2/16/2023</u> Initial: ✓
Manufacturing Location ID: Dayton, TN		Selection Fo	nitidal.[✓] ollow up Ref Job:
Commercial Name of product: Diamond Pro (C00006	38-69)	Sample Recei	pt Date: 1/27/2023
Date of Manufacture: <u>Unknown</u>		Ambient Air Ten	nperature: 23.3 °C
No. of samples submitted: See Comments			umidity: 25 %
Alpha Automation, Triax, TUV System 5:		Equipment: Environmental Cham	her No : PL VP00060
Alpha Automation, Triax, TUV System 7:	☐ ☑		ue Date: 8/30/2023
Accelerometer ID: PL	_	Environmental Cham	
Accelerometer Calibration Date: 7/1			
			ue Date: 8/30/2023
Loose	Fill Materia	al Sample Description:	
Engineered Wood Fiber:		Un-compacted Depth:Inch	es
Loose Fill Wood:			
Rubber Nuggets:			
Rubber Buffings:			
Sand:		Compacted Depth:Inch	es
Gravel: □			
Other:			
	Unitary Sar	nple Description:	
Tiles:		Total Thic	ckness:
Poured in Place:	$\bar{\exists}$	Top	p Layer:
Other:	Ī		e Layer:
·	— rf System S	Sample Description:	, <u></u>
	<u>√</u>		Height: 1.9375 Inches
-	<u>.</u> ✓		ckness: 1.0 Inches
-	<u>.</u> ✓		gregate: 4.0 Inches
	<u></u> ☑		Amount: 2.0 Lbs./Sq. Ft.
_	<u>. • </u>		ill Type: envirofill
Comments: 1.) Customer submitted: eighteen (18) whole pieces of turf; twenty two (22) seamed pieces of turf.	rf; fifty five (55) 1.0 in	ch center pads, twenty seven (27) 1.0 inch seamed pads, twenty	seven (27) 1.0 inch intersection pad, and 150lbs infill.
 Diamond Pro (1.9375in. Pile Height) – infilled with 2.0 lbs per sq. ft. of Envirofill infill (grain size 3.) Least Favorable Impact Location was Center Turf/Center Pad. Last Favorable Impact Location report is 72186757-7b 	∍ #12/20 mesh) – ove	er 1.0 inch Tiger Playground Pad – overlaying 4in. of compacted	aggregate. Total system depth/thickness of 6.9375in.
The maximum critical fall height of the above described sample was	determined to	be: <u>5</u> Ft.	
The results reported herein reflect the performance of the above to the described samples. Samples of surfacing materials that do an accurate representation of the test results.			
Sample in compliance with ASTM F1292-22 at the temperatu	re and rating	specified? Yes	No □
			⊔
Signature: Patrick Ashley		Title: Project Engineering Technician	Date: 2/16/2023
Signature: Patrick Ashley Reviewed by: Timethy Fouli		Title: Project Engineering Technician	Date: 2/22/2023
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Participant: Polyloom dba Tencate Grass TUV Report No: 72186757-7a

Manufacturing Location ID: Dayton, TN Test Date: 2/16/2023

	Critical	Refe	rence Tempe	rature -4°C, (25°F)	Refe	erence Tempe	rature 23°C, (73°F)	Refe	ence Temper	ature 49°C, (1	120°F)
Drop	Fall Height (Ft.)	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	5	145	686	18.0	5.04	161	763	18.0	5.04	159	750	18.0	5.04
2	5	153	719	18.0	5.04	168	804	18.0	5.04	178	870	18.1	5.09
3	5	160	755	18.0	5.04	169	827	18.1	5.09	180	881	18.1	5.09
Avei	rage	156.5	737.0			168.5 815.5				179.0	179.0 875.5		
Measured Surfa	ce Temperature	-4°C	C Max. Change from reference + 5°C, (5°F)			23°C	Max. Cha	ange from refe (5°F)	erence + 3°C,	49°C	Max.	Change from -3°C, (-5°I	
Sample C	ondition:	Dry						Ory			Dry		

		Refe	erence Tempe	rature -4°C, (25°F)	Refe	rence Tempe	rature 23°C, (73°F)	Refe	ence Temper	ature 49°C, (1	120°F)
Drop	One foot over (Ft.)	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	6	183	1033	19.7	6.03	209	1190	19.7	6.03	210	1216	19.7	6.03
2	6	210	1188	19.7	6.03	215	1235	19.7	6.03	234	1353	19.8	6.09
3	6	197	1089	19.8	6.09	201	1164	19.7	6.03	235	1375	19.8	6.09
Aver	age	203.5	1138.5			208.0	1199.5			234.5	1364.0		
Measured Surfac	ce Temperature	-4°C Max. Change from reference + 5°C, (5°F)			erence + 5°C,	23°C	Max. Cha	inge from refe (5°F)	erence + 3°C,	49°C	Max.	Change from -3°C, (-5°I	
Sample Co	ondition:	Dry					Dry					Ory	

		Refe	erence Tempe	rature -4°C, (25°F)	Refe	rence Tempe	rature 23°C, (73°F)	Refe	ence Temper	ature 49°C, (1	120°F)	
Drop	One foot under (Ft.)	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	4	86	303	16.1	4.03	97	349	16.0	3.98	96	321	16.1	4.03	
2	4	101	379	16.1	4.03	115	430	16.1	4.03	117	412	16.1	4.03	
3	4	108	407	16.1	4.03	129	498	16.1	4.03	129	482	16.1	4.03	
Ave	rage	104.5	393.0			122.0	122.0 464.0			123.0	447.0			
Measured Surfa	ce Temperature	-3°C	-3°C Max. Change from reference + 5°C, (5°F)			23°C	Max. Cha	ange from refe (5°F)	erence + 3°C,	48°C	Max.	Change from -3°C, (-5°I		
Sample C	ondition:	Dry					[Ory			Dry			











TÜV SÜD America Inc.

Product Safety Services 1755 Atlantic Blvd. Auburn Hills, MI 48326

Phone: (616) 546-4600

IPEMA Surfacing Material Report - Least Favorable Impact Location - ASTM F1292-22

Participant: Polyloom dba Tencate Grass Main Office Address: 1131 Broadway St. Dayton, TN 37321 Phone: 423.413.7028 Manufacturing Location ID_Dayton, TN Commercial Name of Product: Diamond Pro (C000068-69) Date of Manufacture: Unknown No. of samples submitted: See Comments	Project No.:72186757-7b Report Date:2/16/2023 Test Date:2/16/2023 Selection: Initial Test: Follow up Test: Ref Job: Sample Receipt Date:1/27/2023 Ambient Air Temperature:23.3°C Humidity: 25 %
<u>Test Eq</u>	uipment:
Alpha Automation, Triax, TUV System 5: Alpha Automation, Triax, TUV System 7: Accelerometer ID:PLYP00226 Accelerometer Calibration Date: 7/18/2022	Environmental Chamber No.:PLYP00069 Calibration Due Date 8/30/2023 Environmental Chamber No.:AE-029 Calibration Due Date 8/30/2023
Unitar <u>y</u> Sample L	ayer Description:
Tiles: Poured in Place: Turf: J Other: Other: Determine Least Favorable Impact Location: The highest percentage at the locations indicated on Pages 2 and 3. Impact Location: Least Favorable Impact Location was determined at: Center Turf/Center Pad	Total Thickness: 6.9375in. Top Layer: See Comments Base Layer: See Comments (%) of maximum allowable value, based on g-max or HIC, as tested Reference Temperature: 23°C
Comments: 1.) Samples tested in laboratory environment, overlying poured concrete floor. 2.) Calculate the average g-max and HIC scores by averaging results from the second and third impacts. 3.) After Least Favorable Impact Location is determined at 23°C, remaining testing will be completed at temper 4.) Customer submitted: eighteen (18) whole pieces of turf; twenty two (22) seamed pieces of turf; inch intersection pad, and 150lbs infill. 5.) Diamond Pro (1.9375in. Pile Height)— infilled with 2.0 lbs per sq. ft. of Envirofill infill (grain size in 6.) Determine Critical Fall Height report is 72186757-7a. The above described sample was tested at	atures 49°C and -6°C at that location. fifty five (55) 1.0 inch center pads, twenty seven (27) 1.0 inch seamed pads, twenty seven (27) 1.0 f12/20 mesh) – over 1.0 inch Tiger Playground Pad – overlaying 4in. of compacted aggregate.
The results reported herein reflect the performance of the above described sample to the described samples. Samples of surfacing materials that do not closely material an accurate representation of the test results.	
Sample in compliance with ASTM F1292-22 at the temperature and rating sp	ecified? Yes 🔽 No 🗌
	t Engineering Technician Date: 2/16/2023
Reviewed by: Timethy Tombia Title: Project	t Engineering Technician Date: 2/22/2023

Participant:	Polyloom dba Tencate Grass	Project No.: <u>72186757-7b</u>
		•

Manufacturing Location ID: Dayton, TN

Impact Location: Center Turf/Center Pad

Test Date: 2/16/2023

	Specified	Refe	erence Temper	ature -4°C, (2	5°F)	Refere	nce Temperati	ure 23°C, (73°	F)	Reference	e Temperature	e 49°C, (120°I	F)
Drop	Impact Height (Ft.)	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	5	145	686	18.0	5.04	161	763	18.0	5.04	159	750	18.0	5.04
2	5	153	719	18.0	5.04	168	804	18.0	5.04	178	870	18.1	5.09
3	5	160	755	18.0	5.04	169	827	18.1	5.09	180	881	18.1	5.09
Ave	age	156.5	737.0			168.5	168.5 815.5			179.0	875.5		
Measured Surfa	ce Temperature	-4°C Max. Change from reference + 5°C, (5°F)		rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence + 3°C,	49°C	Max.	Change from a -3°C, (-5°F		
Sample C	le Condition: DRY					D	RY				RY		
Perce	entage (%) of ma	ximum allowable values (g-max and HIC):			C):	G-Max:	84.3%	HIC:	81.6%				

Impact Location: Center Turf/Seam Pad

	Specified	Refe	rence Temper	ature -4°C, (25	5°F)	Refere	nce Temperati	are 23°C, (73°	F)	Reference	e Temperature	49°C, (120°F	7)
Drop	Impact Height (Ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)
1	5				0.00	119	516	18.0	5.04				0.00
2	5		0.00			144	637	18.0	5.04				0.00
3	5				0.00	160	747	18.1	5.09				0.00
Avei	age	0.0	0.0			152.0 692.0				0.0	0.0		
Measured Surfa	ce Temperature	°C Max. Change from reference + 5°C, (5°F)			rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max.	Change from 1 -3°C, (-5°F)	
Sample C	ondition: DRY					D	RY				RY		
Perce	entage (%) of ma	ximum allowable values (g-max and HIC):			C):	G-Max:	: 76.0% HIC : 69.2%						

Impact Location: Center Turf/Intersection Pad

Reference Temperature -4°C, (25°F)			Reference Temperature 23°C, (73°F)					D. C					
	Specified	Refe	erence Temper	ature -4°C, (2:	5°F)	Refere	nce Temperati	ure 23°C, (73°	F)	Reference	e Temperature	49°C, (120°F	F)
Drop	Impact Height (Ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)
1	5	·			0.00	117	503	18.0	5.04				0.00
2	5				0.00	138	607	18.0	5.04				0.00
3	5	·			0.00	158	714	18.1	5.09				0.00
Avei	rage	0.0	0.0			148.0	660.5			0.0	0.0		
Measured Surfa	ce Temperature °C Max. Change from reference + 5°C, (5°F)		rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence + 3°C,	°C	Max.	Change from 1 -3°C, (-5°F)			
Sample C	le Condition: DRY				D	RY				RY			
Perce	entage (%) of ma	naximum allowable values (g-max and HIC):			C):	G-Max:	74.0%	HIC:	66.1%				



Participant: Polyloom dba Tencate Grass

Project No.: 72186757-7b

 $\label{eq:manufacturing Location ID: Dayton, TN} \ \, \text{Manufacturing Location ID: Dayton, TN}$

Test Date: 2/16/2023

Impact Location: Seam Turf/Center Pad

	Specified	Refe	erence Temper	ature -4°C, (2:	5°F)	Refere	nce Temperat	ure 23°C, (73°	F)	Reference	e Temperature	e 49°C, (120°I	(3
Drop	Impact Height (Ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	HIC	Velocity (ft/s)	Theoretical Drop Height (ft.)	G-Max	НІС	Velocity (ft/s)	Theoretical Drop Height (ft.)
1	5				0.00	113	524	18.0	5.04				0.00
2	5				0.00	141	675	18.0	5.04				0.00
3	5				0.00	135	658	18.0	5.04				0.00
Ave	rage	0.0	0.0			138.0	666.5			0.0	0.0		
Measured Surfa	ce Temperature	°C Max. Change from reference + 5°C, (5°F)		rence + 5°C,	23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max.	Change from a -3°C, (-5°F		
Sample C	ondition:	DRY					RY		DRY				
Perce	entage (%) of ma	imum allowable values (g-max and HIC):			C):	G-Max:	69.0%	HIC:	66.7%				

Impact Location: Seam Turf/Seam Pad

	Specified	Refe	rence Temper	ature -4°C, (25	5°F)	Referer	nce Temperati	are 23°C, (73°	F)	Reference	e Temperature	49°C, (120°F	7)
Drop	Impact Height (Ft.)	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	122	603	18.0	5.04				0.00
2					0.00	148	714	18.0	5.04				0.00
3					0.00	152	736	18.0	5.04				0.00
Avei	age	0.0	0.0			150.0	150.0 725.0			0.0	0.0		
Measured Surfa	ce Temperature	°C	°C Max. Change from reference + 5°C, (5°F)		23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max.	Change from 1 -3°C, (-5°F)		
Sample C	ondition:	DRY				D	RY				RY		
Perce	entage (%) of ma	ximum allowable values (g-max and HIC):			C):	G-Max:	75.0%	HIC:	72.5%				

Impact Location: Seam Turf/Intersection Pad

	Specified	Refe	erence Temper	ature -4°C, (2:	5°F)	Refere	nce Temperati	ure 23°C, (73°	F)	Reference	e Temperature	49°C, (120°F	F)
Drop	Impact Height (Ft.)	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	118	520	18.0	5.04				0.00
2					0.00	140	644	18.0	5.04				0.00
3					0.00	157	763	18.1	5.09				0.00
Ave	erage	0.0	0.0			148.5	703.5			0.0	0.0		
Measured Surfa	ace Temperature	°C Max. Change from reference + 5°C, (5°F)		23°C	Max. Cha	nge from refer (±5°F)	rence <u>+</u> 3°C,	°C	Max. 0	Change from 1 -3°C, (-5°F			
Sample C	Condition:			RY			D	RY			D	RY	
Porc	entage (%) of ma	avimum allowable values (a-may and HIC):			C)•	G-May:	74.00/	HIC:	70.40/				





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