



REPORT NUMBER
QI1208164



America

PREPARED FOR
RUBBER-CAL INC.
3012 S. CRODDY WAY
SANTA ANA, CA 92704

ATTENTION
LUIS MACIAS

REPORT DATE
AUGUST 8, 2012

TÜV SÜD America, Inc.
47523 Clipper Street
Plymouth, Michigan 48170 USA
Phone: 734.455.4841
Fax: 734.455.6590
www.TUVAmerica.com

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REPORTED / APPROVED BY:

TÜV SÜD America, Inc.



Reported by: Timothy Lockstein, Project Coordinator
CERTIFICATION TEST PROGRAMS



Approved by: Keith Shelton, Certification 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 F1292-09 – Impact Attenuation of Surfacing Materials within the Use Zone of Playground Equipment.

TEST SEQUENCE

Testing was performed on August 6, 2012 and August 7, 2012.

SAMPLE DESCRIPTION

Rubber-Cal Inc, submitted nine (9) rubber tiles 2.5 inches thick identified as Rubber Safety Surfacing Tile.

TESTING PERFORMED

IMPACT ATTENUATION

Procedure

Sample material was submitted for testing. A 2.5-inch thick sample: 18" x 18", was tested to determine the maximum critical fall height of the product 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 F1292-09, using an average of the last two (2) of three (3) impacts, no value shall exceed 200 G-max or 1000 HIC.

Conclusion

The Rubber Safety Surfacing Tiles met the requirements of ASTM F1292-09, at 6 feet.

SAMPLE DISPOSITION

The samples 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.

TEST EQUIPMENT

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

TÜV ID	Description	Manufacturer	Model	Calibration Due
System 2	Surface Impact Tester	Alpha Automation	Triax 2000	Verified prior to use
PLYP00036	Tri-axial accelerometer	Dytran	3014M2	03/13
PLYP00052	Reference Pad	Alpha Automation	N/A	NCR
PLYP00082	Hemispherical Missile	Alpha Automation	Per figure 1	01/14
PLYP00065	Micro P Display	Unimeasure	MR-0-JR-2MV13	01/13
PLYP00066	Pancake Load Cell	Sensotec	BL114DL30A	01/13
PLYP00068	Digital Thermometer	Omega	HHII	01/13
PLYP00084	Penetration Probe	Omega	88311	01/13
PLYP00080	Measurement Rod	Surveyors	1	10/12
PLYP00069	Environmental Chamber	Russels	RB-8-1-1	08/12
PLYP00101	Environmental Chamber	Thermotron	F-40-CHV-LN2	08/12
PLYP00071	Thermohygrometer	Extech Instruments	445702	01/13

NCR – No Calibration Required

APPENDICES: Appendix A: Test Data

Surfacing Material Report – ASTM F1292-09

Client: **Rubber-Cal Inc.**
Manufacturer: **Rubber-Cal Inc.**
Manufacturing Location: **3012 South Croddy Way
Santa Ana, CA 92704**
Phone: **800.370.9152**
Commercial Name of product: **Rubber Safety Surfacing Tile**
Date of Manufacture: **Unknown**
No. of samples submitted: **9 samples**

TUV Report No.: **QI1208164**
Report Date: **8/8/2012**
Test Date: **8/6/12 & 8/7/12**
Initial Test
Follow up Test **Ref Job:**
Sample Receipt Date: **7/30/2012**
Ambient Air Temperature: **21.8°C**
Humidity: **36.0%**

Test Equipment:

Triax System 1: <input checked="" type="checkbox"/>	Environmental Chamber No.: PLYP00101
Triax System 2: <input type="checkbox"/>	Calibration Due Date: 7/31/12
Accelerometer ID: PLYP00089	Environmental Chamber No.: PLYP00069
Accelerometer Calibration Due Date: 6/1/2012	Calibration Due Date: 7/31/12

Loose fill Material Sample Description:

Engineered Wood Fiber: <input type="checkbox"/>	Un-compacted Depth: _____ Inches
Loose Fill Wood: <input type="checkbox"/>	
Rubber: <input type="checkbox"/>	
Sand: <input type="checkbox"/>	Compacted Depth: _____ Inches
Gravel: <input type="checkbox"/>	
Other: <input type="checkbox"/>	

Unitary Sample Description:

Tiles <input checked="" type="checkbox"/>	Total Thickness: _____ 2.5
Poured in Place <input type="checkbox"/>	Top Layer: <u>N/A</u>
Other <input type="checkbox"/>	Base Layer: <u>N/A</u>

Comments:

The above described sample was tested at : 6 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. Compliance with this Standard does not constitute product certification.

Sample in compliance with ASTM F1292-09 at the temperature and rating specified? Yes No

Client: **Rubber-Cal Inc.**

TUV Report No. **QI1208164**

Manufacturer: **Rubber-Cal Inc.**

Test Date: **8/6/12 & 8/7/12**

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)	G-Max	HIC	Velocity (ft/s)	G-Max	HIC	Velocity (ft/s)
1	6	158	892	19.6	153	843	19.7	162	973	19.6
2	6	158	897	19.7	155	870	19.7	166	988	19.7
3	6	156	879	19.7	161	896	19.7	158	891	19.7
Average		157	888		158	883		162	939.5	
Measured Surface Temperature		-6°C	Max. Change from reference + 5°C,(9°F)		23°C	Max. Change from reference ± 3°C,(5.4°F)		49°C	Max. Change from reference -3°C,(-5.4°F)	
Sample Condition:		DRY			DRY			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)	G-Max	HIC	Velocity (ft/s)	G-Max	HIC	Velocity (ft/s)
1	7	168	1065	21.2	167	1031	21.2	171	1107	21.2
2	7	173	1123	21.2	179	1112	21.2	186	1228	21.2
3	7	176	1106	21.2	172	1065	21.3	179	1162	21.2
Average		174.5	1114.5		175.5	1088.5		182.5	1195	
Measured Surface Temperature		-6°C	Max. Change from reference + 5°C,(9°F)		23°C	Max. Change from reference ± 3°C,(5.4°F)		49°C	Max. Change from reference -3°C,(-5.4°F)	
Sample Condition:		DRY			DRY			DRY		

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)	G-Max	HIC	Velocity (ft/s)	G-Max	HIC	Velocity (ft/s)
1	5	144	736	17.9	130	616	17.9	123	598	17.9
2	5	141	696	18.0	136	640	18.0	134	656	18.0
3	5	140	687	18.0	138	650	17.9	131	625	18.0
Average		140.5	691.5		137	645		132.5	640.5	
Measured Surface Temperature		-6°C	Max. Change from reference + 5°C,(9°F)		23°C	Max. Change from reference ± 3°C,(5.4°F)		49°C	Max. Change from reference -3°C,(-5.4°F)	
Sample Condition:		DRY			DRY			DRY		



America