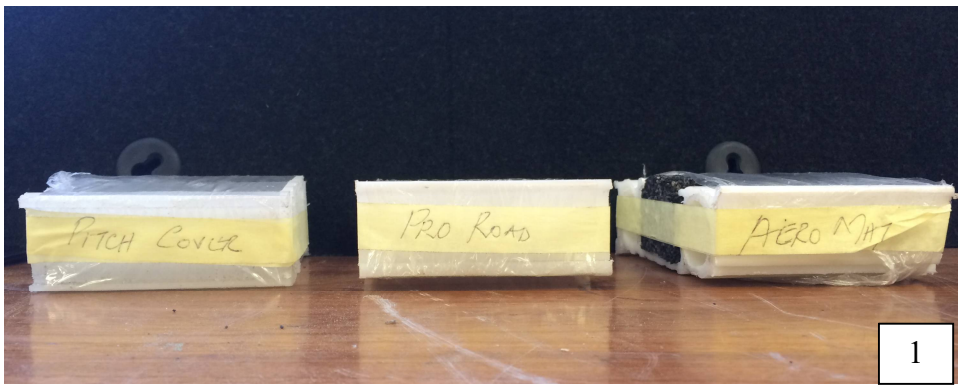
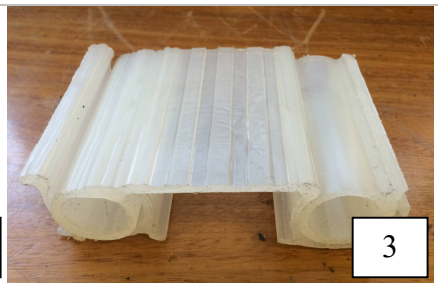
Centre for Polymer Technology (Pty) Ltd.
Reg No : 2006/012857/07
Postnet Suite # 186, Private Bag X025, Lynnwood Ridge 0040
Building 14A, CSIR Campus, Meiring Naude Rd, Brummeria
Telephone : 012 841 4969 | Facsimile : 012 349 1710
E-mail : info@cpttech.co.za | http://www.cpttech.co.za

CPT
CENTRE FOR POLYMER TECHNOLOGY

TEST CERTIFICATE

Compression testing of plastic interlocking mat samples	
CPT Project No.:	CPT 3507
Client:	Portable Event Infrastructure
Address:	22 Tungsten Industrial, 7 CR Swart Drive, Strijdom Park, Randburg, Gauteng, 2195
Attention:	Martin Van Wyk
Confidentiality:	**CONFIDENTIAL**
TERMS AND CONDITIONS	1. The results of this project and / or the CPT staff are not available for any legal proceedings unless thus arranged prior to the contracting of this project. 2. The results and conclusions of the report/test certificate are made to the highest standards, however the Centre for Polymer Technology (Pty) Ltd cannot be held liable for any losses or damages that may result from the use of the contents of the report. 3. If published or reproduced by a client, a test report/test certificate shall be reproduced in full; CPT reports/test certificates may not be reproduced in part. PLEASE NOTE: THIS DOCUMENT AND ALL DATA HEREWITH ASSOCIATED WILL EXPIRE 1 YEAR AFTER ISSUE. EXP: 26/08/2017
Contract No.:	S5326
Date of Issue:	28/08/2016
Sample Identification:	Sample ID: CPTI 1045  *Figure 1: Plastic interlocking mat samples as received*





Figures 2 and 3: Aero mat and pitch cover samples as received

Test requested:	Compression testing of plastic interlocking mats, with a testing speed of 10 mm/min.

SAMPLE INSPECTION

Table 1: Dimensions of *Aeromat* samples

Specimen no	Width, mm	Length, mm	Thickness, mm
1	97	145	39
2	99	146	40
3	98	145	39
4	96	145	40
5	97	146	39

Table 2: Dimensions of *Pro Road* samples

Specimen no	Width, mm	Length, mm	Thickness, mm
1	99	144	40
2	98	146	40
3	101	145	40
4	97	144	40
5	98	145	40

Table 3: Dimensions of *Pitch Cover* samples

Specimen no	Width, mm	Length, mm	Thickness, mm
1	99	140	39
2	92	141	39
3	98	140	40
4	96	139	39
5	96	140	40

TEST METHOD

Each mat sample was placed between two flat plates, which were attached to the tensometer jig, as seen in the images below:

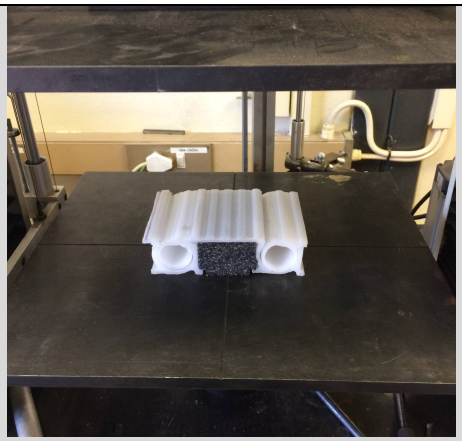


Figure 4

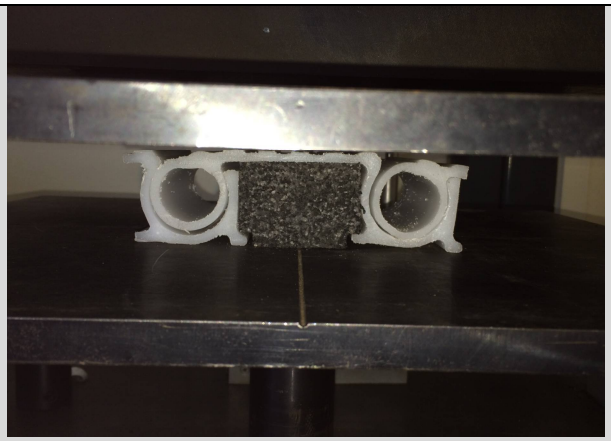


Figure 5

The samples were compressed by the tensometer in the fashion which they would be compressed during the intended use of the product. The maximum compression force was recorded for each sample. It should be noted that the compressions were carried out until the maximum force capable of the tensometer, 20000 N, was reached.

RESULTS

COMPRESSION STRENGTH

Table 4: Compression strengths of five *Aeromat* samples with composite insert

Sample	Compression force (N)
1	**20031.1**
2	**19922.0**
3	**20009.8**
4	**20129.7**
5	**20176.3**
AVERAGE	**20053.8**

Table 5: Compression strengths of five *Pro Road* samples

Sample	Compression force (N)
1	**20011.3**
2	**20056.1**
3	**20029.7**
4	**20187.7**
5	**19967.2**
AVERAGE	**20050.4**

Table 6: Compression strengths of five *Pitch Cover* samples

Sample	Compression force (N)
1	**20198.5**
2	**20191.3**
3	**20195.0**
4	**20120.4**
5	**17342.1**
AVERAGE	**19609.5**

ADDITIONAL FINDINGS

As observed in the compression tests, the interlocking mats withstood the maximum compression force of the tensometer, without failure occurring. Therefore, in order to obtain a value of compression force at which failure occurs, CPT decreased the size of the sample in order to increase the total force/m^2 exerted on the product. The original surface area of the sample was approximately 13 580 mm^2, or 0.01358 m^2. CPT decreased the surface area of the sample to that of 2 900 mm^2, or 0.002900 m^2. By doing this, the area over which the force is exerted was much smaller. This would allow us to extrapolate the data and thus determine the total compression force that the product can withstand in kg/m^2.

Table 7: Compression strength of *Pro Road* samples with decreased surface area

Sample	Compression Force (N)
1	9900.7
2	8204.2
3	11274.0
AVERAGE	9793.0

Table 8: Compression strength of *Aero Mat* samples (with composite insert) with decreased surface area

Sample	Surface area (m^2)	Compression Force (N)
1	0.0029	16425.9
2	0.0029	13289.1
3	0.0029	11304.9
AVERAGE	0.0029	13673.3

CALCULATIONS

Thus, the data collected can be extrapolated to determine the total compression force capacity of the samples in kg/m^2.

Pro Road

Average F_{max} = 9793.0 N (999.3 kg)

Surface area = 0.002900 m^2

Therefore, **344586.2 kg/m^2 (344.6 tonnes/m^2)**

Aero Mat

Average F_{max} = 13673.3 N (1395.2 kg)

Surface area = 0.002900 m^2

Therefore, 4714931.0 kg/m^2 **(471.5 tonnes/m^2)**

Rubber Composite Insert

The compression strength of the rubber insert was evaluated until failure.

Table 9: Compression strength of rubber composite sample

Specimen no	Surface area (m^2)	Compression force (N)
1	0.0053	9579.0

Therefore, 9579 N / 0.0053 m^2 **(977.5 kg/m^2)**

CPT OFFICE USE			
Analyst	**M Thomson** 	Date	28-08-2016
Authorized by:	 **F Prinsloo**	Date	28-08-2016