




TEST REPORT

BM3030 Composite Cover & Steel Frame EN124:2015 B125 Load Bearing Test (BIF 54337)

Document reference number - SSC-BM3030-LBT-54337-21-09-18

Report by:

M.A.Salisbury
Senior Technician

M. A. Salisbury 

Date test carried out:

21st September 2018

Customer name:

Structural Science Composites Ltd.
Unit 8 James Freel Court,
James Freel Close,
Barrow in Furness
LA14 2NG

Clarifying Statements:

1. The results reported have been performed in accordance with the test requirements agreed by the customer (Structural Science Composites Ltd.) and laid down in the new EN 124-1: 2015 standard.
2. This report does not include or imply any expert opinions as to the serviceability of the sample tested or their suitability for a specific purpose.
3. The submitter disclaims any liability of any kind for any damage whatsoever resulting from the use of either data in the files or the attached values of the test results reported.
4. The report may not be reproduced other than in full, except with the prior written consent of the Engineering Dept., Lancaster University.
5. All testing has been carried out in within the Engineering Department, Gillow Ave., Lancaster University, Bailrigg, Lancaster LA1 4YW.
6. This report applies only to those items and/or materials that have been tested and reported on herein. No inference shall be made to similar test items or materials/ samples.

Cover

The cover supplied is a square BM3030 composite cover (Photo. 1)

Cover No. – 54337

A steel frame was also supplied with a clear opening of 300mm x 300mm.



Photo. 1

Test Rig

The test rig consists of a 'giant mecano' frame bolted to the floor and supporting an Enerpac 50 ton hydraulic cylinder. (Photo 2)

Calibration Sticker (Photo.3)



Photo.2

The frame sat on an internal wooden frame which was used as a support, which in turn sat on steel channels with shims to pack and level.

In accordance with the EN124-1:2015 standard the load cell and test rig complies with EN ISO 7500-1:2004 minimum Class 3.

Test Rig ID: EG100TF

Load Cell ID:

Instron Calibration Certificate No. E225112816155035

System Class: 2



Photo.3

Test

The tests were carried out in accordance with the EN 124:2015 standard for:

- Permanent Set – Clause 8.2
- Load Bearing Capacity – Clause 8.3

The load was applied to the panels through a 150mm diameter by 50mm thick steel block with a 150mm diameter by 10mm rubber pad between the block and panel.

Permanent Set Test

Measurement of permanent set shall be made on the upper-side of the cover in the same place as the applied load at the longest dimension which can be inscribed within the cover through the centre point of the load application. The measurement device shall be positioned as close as possible to the centre point of the load application and the seating of the measuring device support as close as possible to the edge of the cover but not exceeding 10mm from the edge.

An initial reading is to be taken at the geometric centre of the cover before the first load or any preloading has taken place.

The load is then to be applied at a rate of 1kN/s to 5kN/s up to 2/3 of the test load. This procedure is to be carried out five times without significant disruption.

A final deflection reading shall then be taken and the permanent set determined as the difference of the measured readings between the first and fifth readings.

Load Bearing Capacity

Immediately after the permanent set test the cover shall be loaded up to the test load at a rate of 1kN/s to 5kN/s.

The test load shall then be maintained for 30^{+2}_{-0} seconds.

Permanent set test

Photograph 4 below shows the initial reading being taken for the permanent set test.



Photo.4

Initial Reading	0.00mm
Reading after 5 cycles	0.90mm
Permanent Set	0.90mm

Permissible permanent set for a B125 test is $\frac{CO}{100} = \frac{300}{100} = 3.00\text{mm}$

Therefore cover passes the permanent set test.

Load Bearing Capacity Test

Load applied immediately after the permanent set test.

Although the standard does not require it for the load bearing test, a measuring device (linear potentiometer) was placed on the underside of the cover directly under the loading point. Deflection readings were taken throughout the test including the initial permanent set test and the results given in the following table.

Results

LOAD (kN)	DEFLECTION (mm)	REMARKS
0	0.00	
83	18.62	
0	1.76	
83	19.00	
0	1.76	
83	19.20	
0	2.05	
83	19.20	
0	2.05	
83	19.11	
0	2.05	
10	5.29	
20	8.23	
30	10.46	
40	12.34	
51	14.40	
60	15.97	
71	17.94	
80	18.81	
93	20.48	
100	21.77	
110	23.18	
120	24.20	
125	27.63	
125 (10 seconds)	28.42	
125 (20 seconds)	28.71	
125 (30 seconds)	29.10	
0	4.50	PASS
165	Gauge removed	Ultimate failure

The deflection measurements taken above may not be totally accurate as some of the movement may be the wooden support frame crushing.

BM3030 EN124 Class B125 Test (BIF 54337)

