LANCASTER UNIVERSITY
Engineering Department
Faculty of Applied Sciences

TEST REPORT

FM45-D400-1350 Trench Panel
EN124 D400 Test

Date: 18/10/12

Client: Fibrelite Composites Ltd.

Cover

The cover supplied is a rectangular FM45, 1350mm x 450mm x 120mm Trench panel and of composite construction. (See photo. 1)

Photo. 1

Test Rig

The test rig consists of a ‘giant mecanno’ frame bolted to the floor and supporting the Enerpac 50 tonne hydraulic cylinder. (Photo 2)

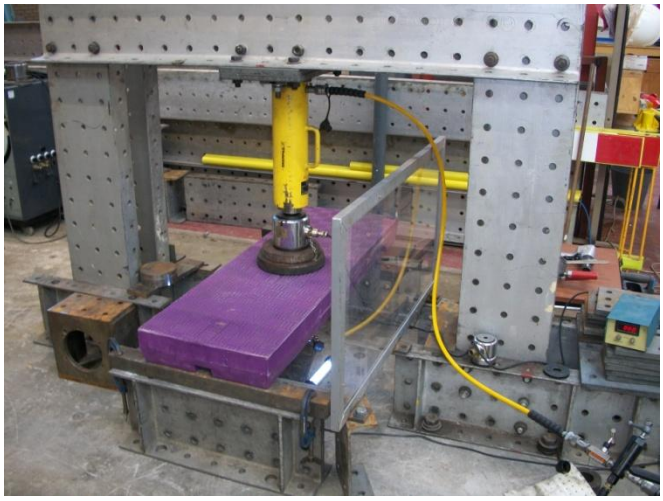


Photo. 2

The cover was supported on steel channels at each end leaving a span of 1220mm.

Test

The test was carried out in accordance with BS EN 124, Class D400.
The load was applied to the panel through a 250mm diameter by 45mm thick steel block with a 250mm diameter by 25mm rubber pad between the block and panel.

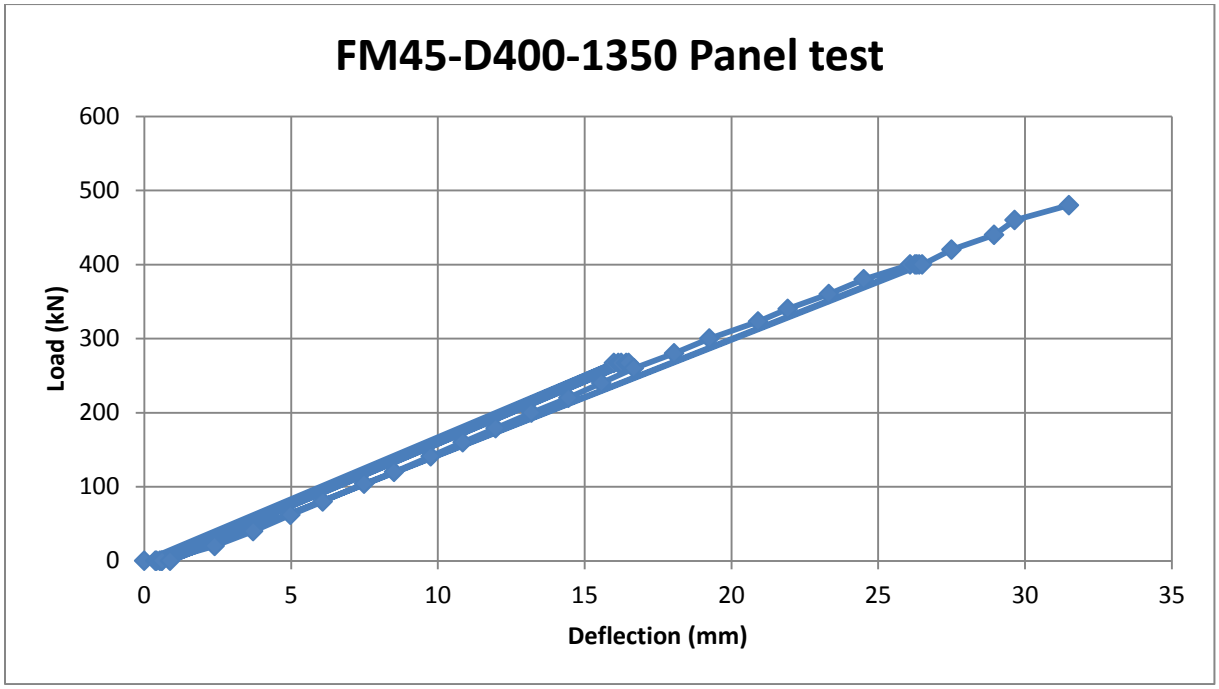
The load was measured using a 1000kN load cell (serial no. 3243N) and digital load indicator (serial no. D.I.B.1).

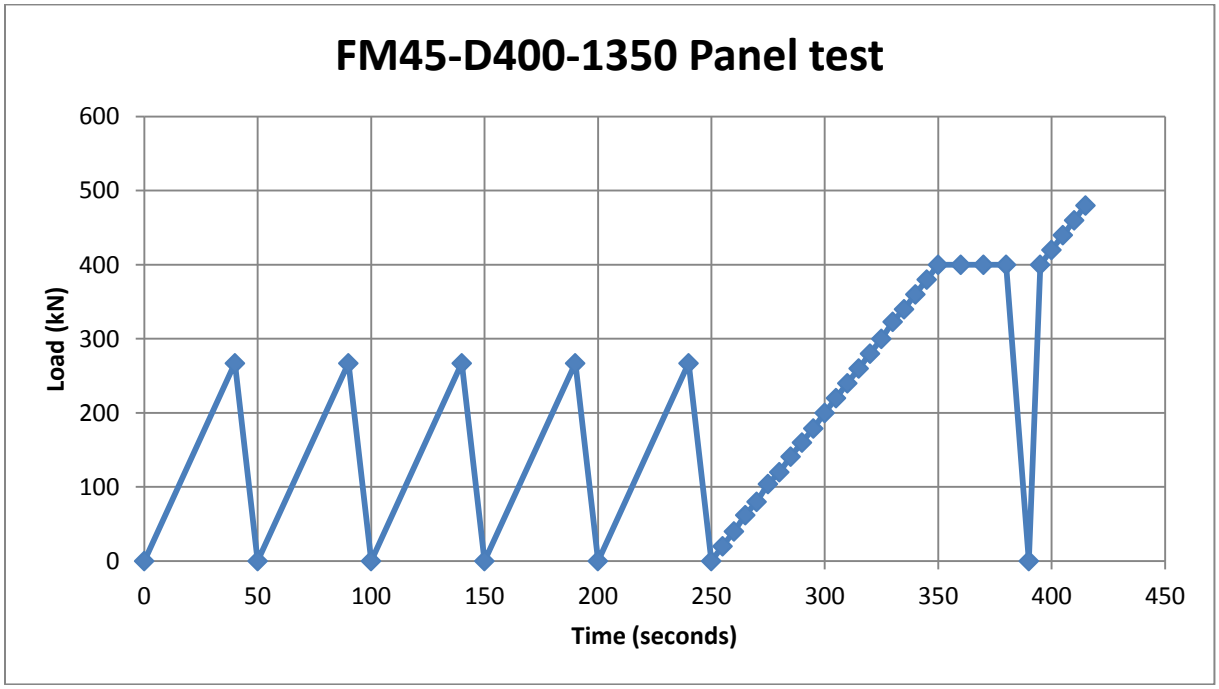
The deflection was measured at the centre on the underside of the panel using a dial indicator.

The panel was loaded to 2/3 of the test load and then released. This was repeated five times. It was then loaded to try and achieve the test load of 400kN.

Results

LOAD	DEFLECTION (mm)	REMARKS
0	0.00	
267	16.00	
0	0.38	
267	16.15	
0	0.42	
267	16.25	
0	0.53	
267	16.42	
0	0.58	
267	16.50	
0	0.61	
20	2.40	
40	3.71	
62	4.98	
80	6.08	
104	7.49	
120	8.51	
141	9.76	
160	10.85	
179	11.97	
200	13.19	
220	14.45	
240	15.57	
260	16.68	
280	18.05	
300	19.25	
323	20.91	
340	21.92	
360	23.32	Some light cracking noises.
380	24.51	
400	26.09	
400 (10 seconds)	26.26	
400 (20 seconds)	26.32	
400 (30 seconds)	26.40	
0	0.88	
400	26.50	
420	27.50	
440	28.95	
460	29.65	
480	31.50	


FM45-D400-1350 Panel test
Load (kN)
600
500
400
300
200
100
0
0
5
10
15
20
25
30
35
Deflection (mm)


FM45-D400-1350 Panel test
Load (kN)
600
500
400
300
200
100
0
0
50
100
150
200
250
300
350
400
450
Time (seconds)

In accordance with EN124 Clause 8.3.1 the permanent set of the panel was 0.61mm which is within the permissible stated in Table 8 of the standard. (1/300 x 450 = 1.50mm).

The panel held the test load of 400kN for the required 30 seconds.

The panel therefore passed the EN124 D400 test for both permanent set and load.

After the panel had passed the EN124 test the load was released and a permanent set of 0.88mm was recorded.

The panel was then loaded to try and achieve failure.

Unfortunately the test had to be stopped at 480kN when the capacity of the test rig had been reached and the panel had not actually failed.

The load was released and the panel inspected.

The only visible sign of damage was on the underside where some light cracks could be seen near the centre. (Photo.3)

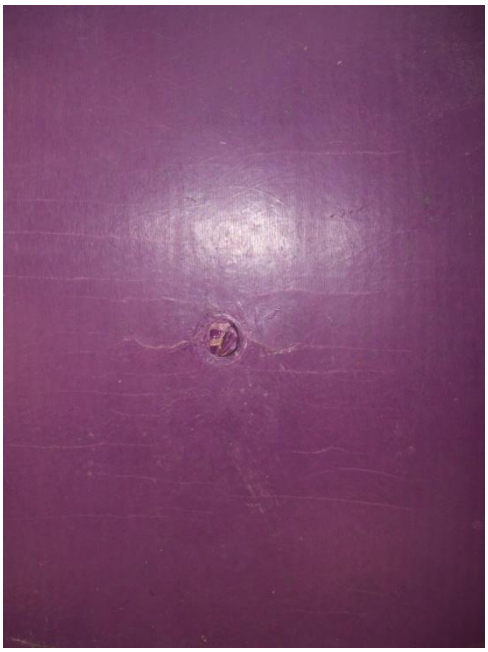


Photo.3

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