


## Mechanical Testing

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- Tensile
  - Compression
  - Bend
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  - Proof Load
  - Structures
  - Fasteners
  - Composites
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  - Fatigue
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  - Formwork
  - Force Calibrations

IN CONFIDENCE TO THE CLIENT

REPORT NO: MT-14/790

## COMPRESSION LOAD TESTING OF CONCRETE VOID FORMING SYSTEMS

CLIENT: **BILDAVOID**  
ATTENTION: CHRISTINE MANCER  
PO Box 199  
BEROWRA HEIGHTS NSW 2082

DATE OF TEST: OCTOBER 16<sup>TH</sup> 2014

DATE OF REPORT: OCTOBER 17<sup>TH</sup> 2014

### TEST SYNOPSIS:

Expanded honeycomb panels used as void forming systems in concrete construction were delivered to the MTS Laboratory for testing (see Fig.1).

The client provided the following identification details:

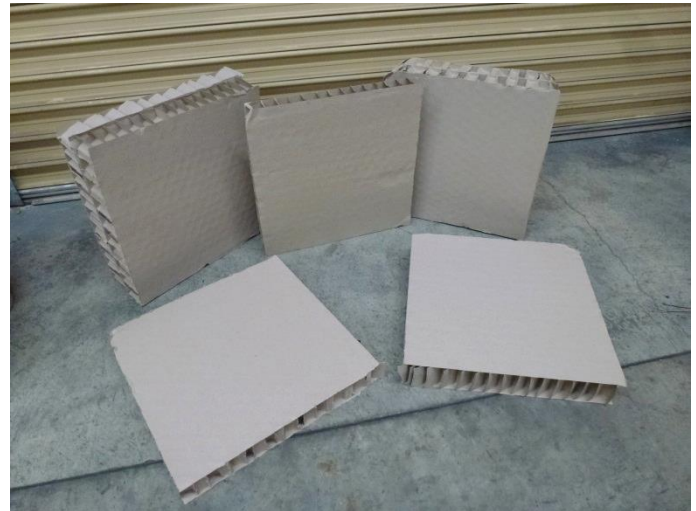
**Product I.D:** *FilaVOID*

**Material:** *Cardboard based*

**Panel Size:** *600mm x 600mm (nom.)*

**Thicknesses:** *50mm, 75mm, 100mm, 150mm & 200mm (nom.)*

At the request of the client, compression tests were to be conducted on the honeycomb panels to determine their ultimate load capacity.



**FIG.1**  
**FILAVOID TEST ITEMS**

### TEST PROCEDURE:

Testing commenced by positioning each test sample centrally between the rigid loading platens of a calibrated universal MTS testing machine (see Fig.2). A compressive force was gradually applied at a rate of 2mm per minute over the test sample by downward displacement of the testing machine's actuator. Testing was stopped when the test items had been crushed and the peak force achieved. The applied test force and corresponding displacement was autographically recorded throughout each test. Three (3) repeat tests were conducted for each panel thickness.

### TEST RESULTS & OBSERVATIONS:

Test data of peak test force and calculated average peak load per square metre ( $\text{kg/m}^2$ ) is provided in Table 1.

Post-test observations of the FilaVOID test items revealed collapse of the internal webs as the predominant failure mechanism.

Test data curves of "Applied Force vs Crosshead Displacement" are provided in Figures 4 to 8.

**TEST COMMENTS:**

For all tests, the common mode of failure was observed to be collapse of the internal vertical members (web).

For honeycomb panels of thicknesses ranging from 200mm to 75mm, the test results showed that the load capacity of the FilaVOID test items increased with thinner panels (see Table 1).

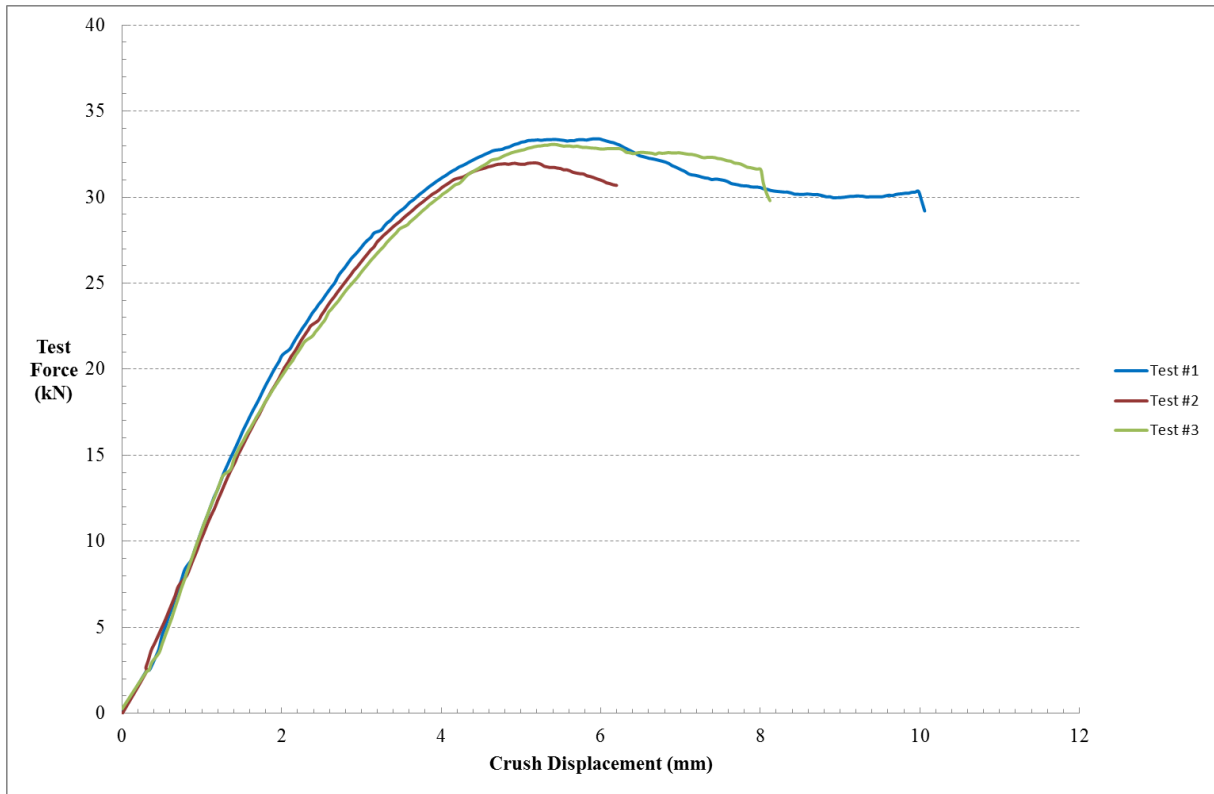
Alternatively, peak forces recorded for the 50mm FilaVOID test items were observed to be similar to the peak loads recorded for the thicker 200mm FilaVOID test items. Investigation of the internal webbing revealed a web thickness of approx. 0.8mm for the 200mm panels and approx. 0.5mm for the 50mm panels.



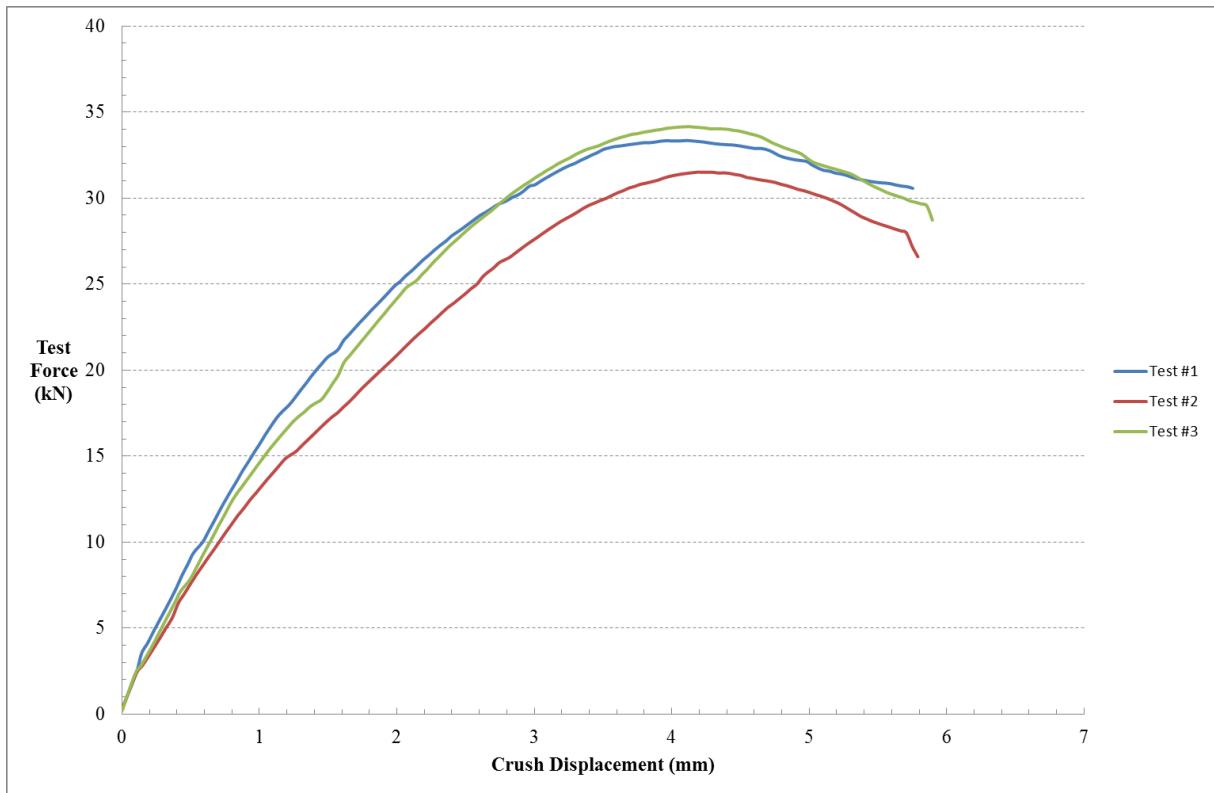
**FIG.2  
TEST SET-UP**

Test No.	Thickness (mm)	Peak Force (kN)	Average (kN)	Average (kg)	Average Peak Load per sq.m. (kg/m <sup>2</sup> )
1	200	33.4	32.8	3345	9293
2		32.0			
3		33.1			
4	150	33.4	33.0	3365	9346
5		31.5			
6		34.2			
7	100	33.3	35.1	3578	9940
8		37.3			
9		34.7			
10	75	42.1	43.3	4411	12254
11		44.8			
12		42.9			
13	50	30.2	31.6	3224	8955
14		33.0			
15		31.6			

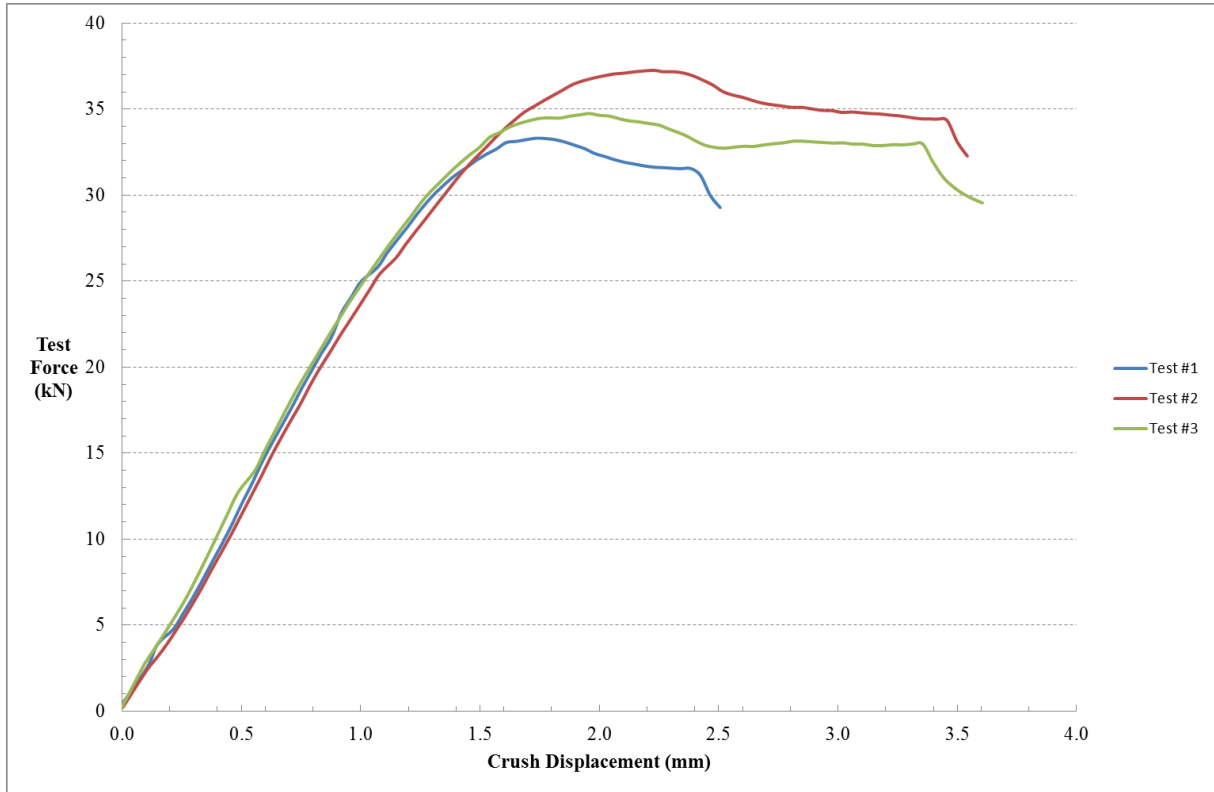
**TABLE 1.  
FILA VOID COMPRESSIVE LOAD TEST DATA**



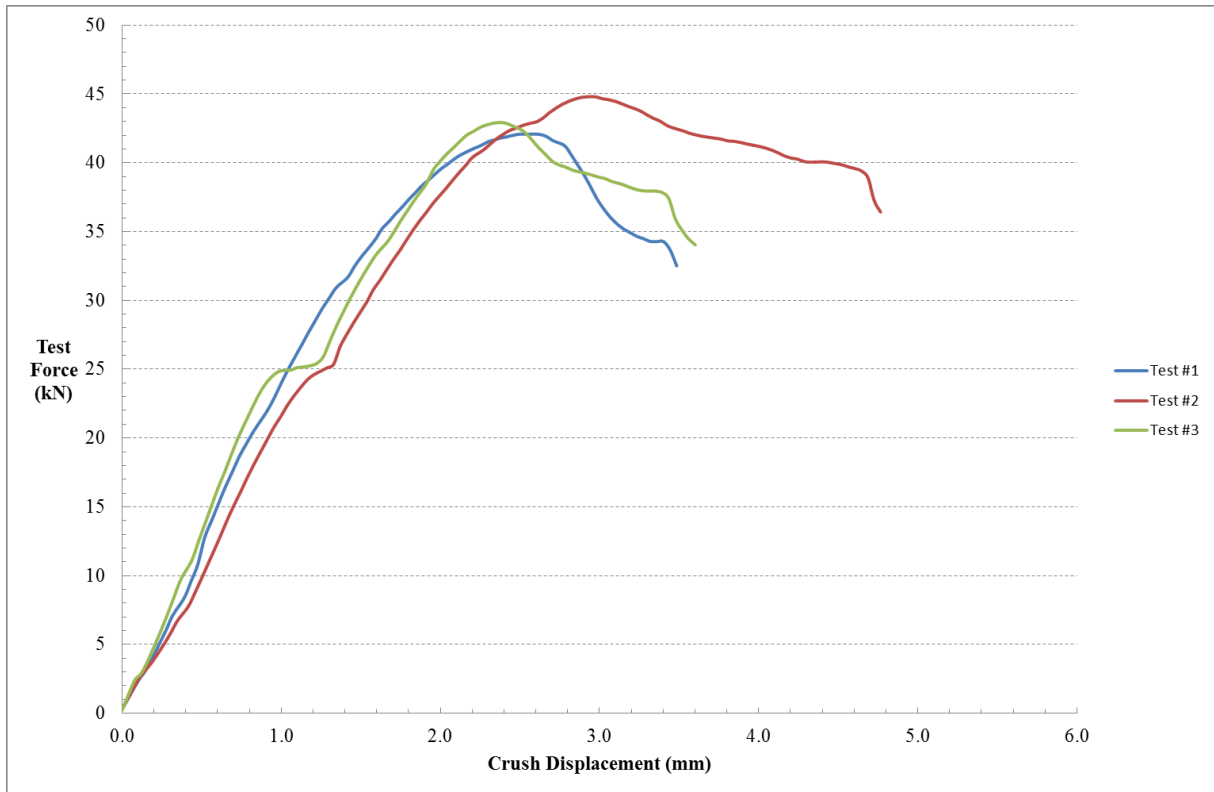
**FIG.4**  
**TEST CURVES FOR 200MM THICK FILA VOID**



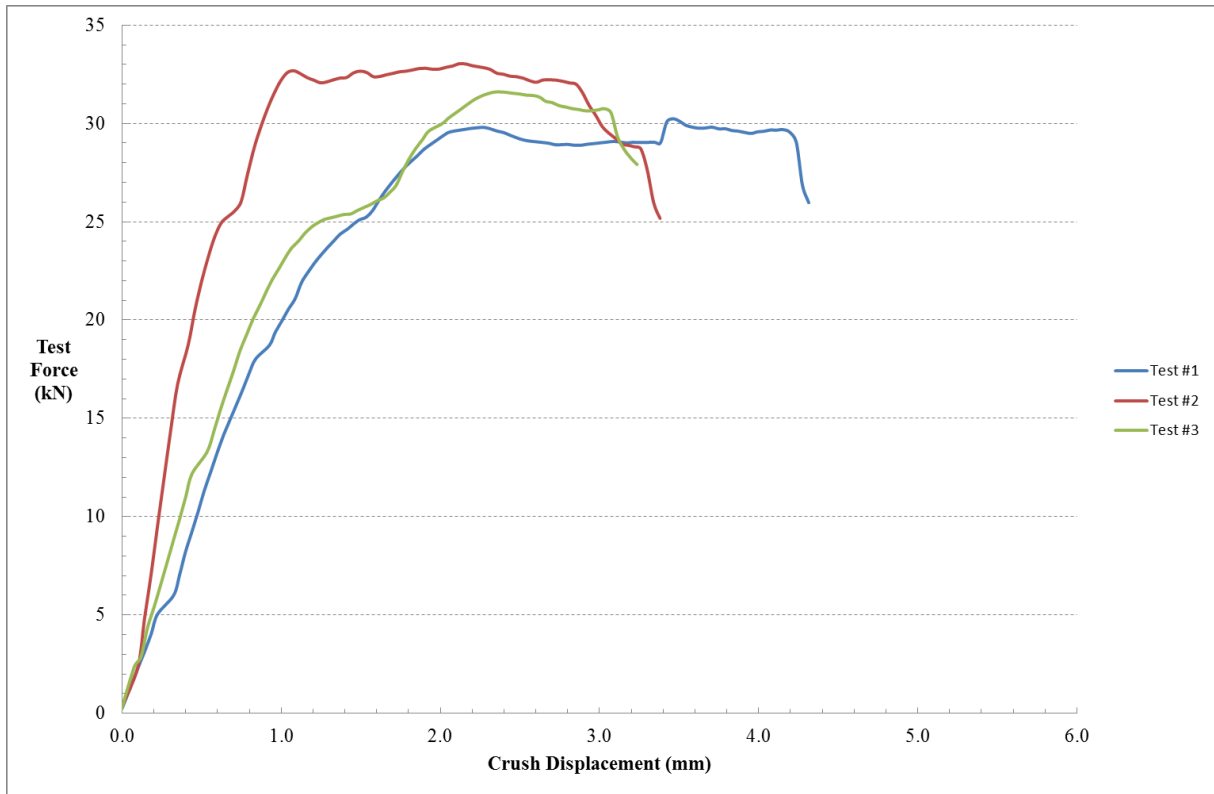
**FIG.5**  
**TEST CURVES FOR 150MM THICK FILA VOID**



**FIG 6**  
**TEST CURVES FOR 100MM THICK FILA VOID**



**FIG 7**  
**TEST CURVES FOR 75MM THICK FILA VOID**



**FIG 8**  
**TEST CURVES FOR 50MM THICK FILAVOID**

Notes:

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2. It remains the responsibility of the client to ensure that the samples tested are representative of the entire product batch.
3. MTS shall take no responsibility for the procurement and authenticity of the test product as described herein.
4. This report is specific to the test items in their state at the time of testing. It should not be taken as a statement that all products in all states of repair, would also perform in the same manner.
5. MTS shall take no responsibility for the interpretation or misinterpretation of the procedures or calculation methods as provided herein or for the appropriateness or validity of the test procedures for the test items described and reported herein.
6. MTS shall take no responsibility for the installation procedures used for the test items as described herein.
7. The tests were conducted at 21°C and are considered Experimental Type Tests and therefore do not validate or certify the products with any Australian or International standards that may apply.

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**SENIOR LABORATORY OFFICER**