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Testing of NRG Building Systems Pty Ltd EPS Specimens

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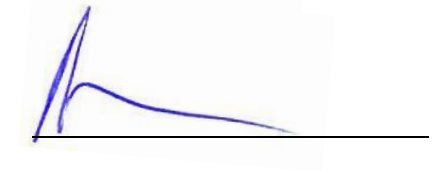

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   iii. any defects in the Products the subject of the Services; or
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Testing of NRG Building Systems Pty Ltd EPS Specimens

1. CLIENT

NRG Building Systems Pty Ltd
PO Box 6342
Yatala DC
Queensland QLD 4207
Australia

2. MATERIALS

The client supplied EPS specimens as follows:

- Nine specimens 50 x 50 x 50mm (nominal)
- Six specimens 200 x 50 x 50mm (nominal)
- Six specimens 100 x 100 x 25mm (nominal)
- Ten specimens 25 x 67mm diameter (nominal)

BRANZ was not involved in the selection of these specimens and as-such is unable to comment upon how representative they are of normal production material.

3. DESCRIPTION OF TEST PROCEDURES

The test methods used can be found in Table 1 below.

Table 1 : Description of Test Methods

Test Type	Test Method	Title
Compressive Stress	AS 2498.3 – 1993	Methods of testing rigid cellular plastics – Method 3: Determination of compressive stress
Flexural strength	AS 2498.4 – 1993	Methods of testing rigid cellular plastics – Method 4: Determination of cross-breaking strength
Water Vapour Transmission	AS2498.5 – 1993	Methods of testing rigid cellular plastics – Method 5: Determination of dimensional stability
Dimensional Stability	AS2498.6 – 1993	Methods of testing rigid cellular plastics – Method 6: Determination of dimensional stability

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4. RESULTS

The results reported here relate only to the items tested.

4.1 AS 2498.3 Determination of Compressive Strength

Five specimens 50 x 50 x 50mm (nominal), supplied by the client, were tested. The surfaces of the specimens parallel with the faces of the sample were marked to ensure that they were the load bearing surfaces and that the load was applied perpendicular to these faces. The specimens were tested at a crosshead speed of 5 mm/minute. The results are recorded in Table 1.

Table 1 : Compressive Stress at 10% relative deformation results

Specimen No	Compressive Strength (kPa)
1	144.9
2	108.6
3	132.5
4	116.6
5	133.4
Average	**127.2**

4.2 AS 2498.4 Determination of Cross-Breaking (Flexural) Strength

Five specimens 50 x 50 x 200mm (nominal), supplied by the client, were tested. The specimens were tested at a span of 152 mm and a crosshead speed of 25 mm/minute. The results are recorded in Table 2.

Table 2 : Cross Breaking Strength results

Specimen No	Cross-Breaking Strength (kPa)
1	267.7
2	280.1
3	267.7
4	311.4
5	315.0
Average	**288.4**

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4.3 AS 2498.5 Determination of water vapour transmission

Five specimens 67mm dia. x 25mm (nominal), supplied by the client, were tested. Testing was conducted from 15-Feb-10 to 22-Feb-10 using an environmental chamber set to produce conditions of 23.0°C and 85.0%RH. The test was terminated after 6 data points were obtained for each of the 5 specimens under test. The results are recorded in Table 3.

Table 3 : Water Vapour transmission results

Specimen No	WVT_{23} (µg/m^2.s)
1	280
2	320
3	290
4	340
5	280
Average	**300**

4.4 AS 2498.6 Determination of dimensional stability

Three specimens 100mm x 100mm x 25mm (nominal), supplied by the client, were tested. The length (L) and width (W) of each test specimen were measured at three positions. Two length and width measurements were made 10mm from each edge and the third measured at the centre of each edge. Thickness (T) was measured at five positions, 10mm from each corner and at the centre of each specimen. The specimens were conditioned in an oven set at 70ºC (dry), measurements were taken after 20 ± 1 h, 48 ± 2 h, 7 days. The results are recorded in Table 4.

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Table 4 : Dimensional Stability results

Percentage change		Δ%		
Exposure period		20 hrs	48 hrs	7 days
Specimen 1	T1	0.1	0.1	0.0
	T2	0.0	0.0	0.0
Thickness (mm)	T3	0.0	0.0	0.0
	T4	0.0	0.0	0.0
	T5	0.0	0.0	0.0
	Average	**0.0**	**0.0**	**0.0**
	L1	-0.1	-0.1	-0.1
Length (mm)	L2	-0.1	-0.1	-0.1
	L3	0.0	0.0	0.0
	Average	**-0.1**	**-0.1**	**-0.1**
	W1	-0.1	-0.1	-0.1
Width (mm)	W2	-0.1	-0.1	-0.1
	W3	0.0	0.0	0.0
	Average	**-0.1**	**-0.1**	**-0.1**
Specimen 2	T1	-0.1	-0.1	-0.1
	T2	0.0	0.0	0.0
Thickness (mm)	T3	0.0	0.0	0.0
	T4	-0.1	-0.1	-0.1
	T5	0.0	0.0	0.0
	Average	**0.0**	**0.0**	**0.0**
	L1	-0.1	-0.1	-0.1
Length (mm)	L2	-0.1	-0.1	-0.1
	L3	-0.1	-0.1	-0.1
	Average	**-0.1**	**-0.1**	**-0.1**
	W1	-0.1	-0.1	-0.1
Width (mm)	W2	-0.1	-0.1	-0.1
	W3	-0.1	-0.1	-0.1
	Average	**-0.1**	**-0.1**	**-0.1**

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Table 4 : Dimensional Stability results

Percentage change		Δ%		
Exposure period		20 hrs	48 hrs	7 days
Specimen 3	T1	0.0	-0.1	-0.1
	T2	0.0	0.0	0.0
Thickness (mm)	T3	0.0	0.0	0.0
	T4	0.0	0.0	0.0
	T5	0.0	0.0	0.0
	Average	**0.0**	**0.0**	**0.0**
	L1	0.0	0.0	0.0
Length (mm)	L2	0.0	0.0	0.0
	L3	-0.1	-0.1	-0.1
	Average	**-0.1**	**-0.1**	**-0.1**
	W1	-0.1	-0.1	-0.1
Width (mm)	W2	0.0	0.0	0.0
	W3	0.0	0.0	0.0
	Average	**0.0**	**0.0**	**0.0**

No visual distortion was detected at any of the exposure periods.

5. REFERENCES

AS 2498.3 – 1993. Methods of testing rigid cellular plastics – Method 3: Determination of compressive stress.

AS 2498.4 – 1993. Methods of testing rigid cellular plastics – Method 4: Determination of cross-breaking strength.

AS 2498.5 – 1993. Methods of testing rigid cellular plastics – Method 5: Determination of water vapour transmission rate.

AS 2498.6 – 1993. Methods of testing rigid cellular plastics – Method 6: Determination of dimensional stability.

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