



TEST REPORT

DC18218-01

REPORT ON TESTING OF AN EPS SAMPLE TO VARIOUS AS 2498 METHODS

CLIENT

NRG Building Systems Australia
2/13-15 Octal Street
Yatala QLD 4213
Australia

All tests and procedures reported herein, unless indicated, have been performed in accordance with BRANZ ISO9001:2015 Certification



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LIMITATION

The results reported here relate only to the item/s tested.

TERMS AND CONDITIONS

This report is issued in accordance with the Terms and Conditions as detailed and agreed in the BRANZ Services Agreement for this work.

SIGNATORIES


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1. SCOPE

Testing of a supplied Expanded Polystyrene (EPS) to a variety AS 2498 methods.

2. PRODUCT

The client supplied five samples of an expanded polystyrene, each sheet being approximately 600 mm by 600 mm and 50 mm thick. The samples were given BRANZ sample numbers 23/717/1 to 23/717/5.

3. METHOD

The following test methods were used:

- AS 2498.3 compressive stress
- AS 2498.4 cross breaking strength
- AS 2498.5 water vapour transmission
- AS 2498.6 dimensional stability

The samples were conditioned using the methods in:

- AS 2498.1 sampling and conditioning

Measurements of the samples dimensions were made using the methods in:

- AS 2498.2 determination of linear dimensions

4. RESULTS

The results reported in this report relate only to the samples as received.

All samples were conditioned as in AS 2498.1.

4.1 AS 2498.3 Determination of compressive stress

From each of the five supplied sheets five specimens 50 mm by 50 mm by 50 mm were cut.

Each specimen was measured before being tested in an Instron compression testing machine. The cross-head speed used was 5 mm/min being 10% of the initial thickness per minute.

All samples with one exception were tested with the original outer faces horizontal.

No skin or facings were present on the samples.

Testing was carried out on the 7th of November 2023.

Results below are the compressive stress at 10% relative deformation (δ_{10}).



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Sample No.	Compressive stress (δ_{10}) [kPa]				
	23/717/1	23/717/2	23/717/3	23/717/4	23/717/5
1	170.4	167.4	171.5	183.5	165.4
2	185.6	180.3	166.8	182.5	169.9
3	182.7	190.2	181.1	181.3	168.1
4	175.4	186.4	177.6	179.9	168.4
5	180.6*	171.5	170.0	186.0	169.2
Sample Average	178.9	179.2	173.4	182.7	168.2
Global Average	176.5				

* Sample tested on its side

4.2 AS 2498.4 Determination of cross-breaking strength

From each of the five supplied sheets three specimens 200 mm by 50 mm by 50 mm were cut.

Each specimen was measured before being tested in an Instron compression testing machine. The cross-head speed used was 25 mm/min.

Testing was carried out on the 9th of November 2023.

Sample No.	Cross-breaking strength (kPa)				
	23/717/1	23/717/2	23/717/3	23/717/4	23/717/5
1	318.9	309.3	282.0	291.9	312.1
2	313.0	306.7	303.7	292.0	303.8
3	304.4	326.7	291.0	311.7	291.1
Sample Average	312.1	314.2	292.2	298.5	302.3
Global Average	303.9				



4.3 AS 2498.5 Determination of water vapour transmission rate

From each of the five supplied sheets one specimen 25 mm thick and shaped to fit the opening of the available 250 ml beakers was cut.

The beakers had 25 g of anhydrous calcium chloride placed in them before the specimens were sealed in the openings. The particle size used was approximately 2 mm diameter, the standard requires particles around 5 mm diameter.

The specimens were placed in an environmental chamber set at 23.0°C and 85 % Rh. The specimens were removed daily and re-conditioned at 23°C in a desiccator over anhydrous calcium chloride for 30 minutes before being weighed. The weights recorded were plotted and after four days the lines had a minimum R² value of 0.9998, the testing was concluded and the results calculated.

Testing was carried out between the 10th and 14th of December 2023.

Specimen	WVT ₍₂₃₎ (µg/m ² .s)
23/717/1	130
23/717/2	110
23/717/3	120
23/717/4	120
23/717/5	130
Average	122

4.4 AS 2498.6 Determination of dimensional stability

From each of the five supplied sheets one specimen 100 mm by 100 mm by 25 mm was cut.

The length (L) and width (W) were measured at 10 mm from each edge and in the centre of the edge. The thickness was measured 10 mm from each corner and in the specimen centre.

The specimens were conditioned in an oven set at 70°C. the specimens were removed from the oven at the specified intervals and reconditioned at room temperature.

Testing was carried out between the 11th and 18th of December 2023.

No distortion of the specimens was seen during the testing.

The results below are the percentage change in the measurements.

Length Specimen	Percent change after 23 hours (%)	Percent change after 47 hours (%)	Percent change after 7 days (%)
23/717/1	-0.02	-0.09	-0.13
23/717/2	-0.01	-0.05	-0.03
23/717/3	0.01	-0.04	0.02
23/717/4	0.00	-0.10	-0.02
23/717/5	0.02	-0.07	0.00
Average	0.00	-0.07	-0.03

Width Specimen	Percent change after 23 hours (%)	Percent change after 47 hours (%)	Percent change after 7 days (%)
23/717/1	-0.04	-0.11	-0.05
23/717/2	-0.05	0.03	0.04
23/717/3	-0.14	-0.07	-0.12
23/717/4	-0.13	-0.23	-0.08
23/717/5	-0.07	-0.17	-0.07
Average	-0.09	-0.11	-0.06



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Thickness Specimen	Percent change after 23 hours (%)	Percent change after 47 hours (%)	Percent change after 7 days (%)
23/717/1	-0.59	-0.70	-0.63
23/717/2	-0.39	-0.45	-0.38
23/717/3	-1.51	-0.74	-0.50
23/717/4	-1.67	-0.84	-0.51
23/717/5	-1.59	-0.48	-0.29
Average	-1.15	-0.64	-0.46

5. REFERENCES

- AS 2498.1-1993 *Methods of testing rigid cellular plastics Method 1: Sampling and conditioning.*
Standards Australia, Sydney, 1993.
- AS 2498.2-1993 *Methods of testing rigid cellular plastics Method 2: Determination of linear dimensions.*
Standards Australia, Sydney, 1993.
- AS 2498.3-1993 *Methods of testing rigid cellular plastics Method 3: Determination of compressive stress.*
Standards Australia, Sydney, 1993.
- AS 2498.4-1993 *Methods of testing rigid cellular plastics Method 4: Determination of cross-breaking strength.*
Standards Australia, Sydney, 1993.
- AS 2498.5-1993 *Methods of testing rigid cellular plastics Method 5: Determination of water vapour transmission rate.*
Standards Australia, Sydney, 1993.
- AS 2498.6-1993 *Methods of testing rigid cellular plastics Method 6: Determination of dimensional stability.*
Standards Australia, Sydney, 1993.



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