

Advanced Plastic Recycling  
500 Churchill Rd  
KILBURN SA

Attention: Mr Edward Culpin

AMDEL TEST REPORT: 09MAAD11486  
ISSUE DATE: 09/04/09

CLIENT REFERENCE: Request Edward Culpin

SAMPLE IDENTIFICATION: Wood Plastic Composite Beam

WORK REQUESTED: Thermal Expansion/Contraction at -10°C and 70°C

INVESTIGATING OFFICER(S): Adrian Fahey / Dylan Randall

A handwritten signature in blue ink, appearing to be "S. Harris", with a long horizontal line extending to the right.

Simon Harris  
Laboratory Manager  
Materials Services

### 1. INTRODUCTION

Edward Culpin of Advanced Plastic Recycling supplied a wood plastic composite beam to the Amdel Materials Services Laboratory. It was requested that an investigation be carried out to determine the extent of expansion and contraction when the beam is subjected to -10°C and 70°C temperatures.

### 2. PROCEDURE

A section of the wood-plastic composite beam (approximately 500mm in length) was taken from the beam. The section was allowed to rest at ambient temperature ( $23 \pm 2^\circ\text{C}$ ), before being measured with a set of Mitutoyo digital vernier callipers. Measurements were taken throughout the length, width and thickness of the beam. The measurement sites were identified as “A – I (and L1-L3)”. (see Fig 1 on Page 3).

The sections were then placed in an environmental chamber and conditioned for two hours at -10°C. Measurements were then taken as per above. The environmental chamber was then raised to 70°C, the sections were conditioned for a further two hours, after which more measurements were taken.

The measurements recorded at -10°C and 70°C were then compared with the measurements taken at ambient temperature ( $23 \pm 2^\circ\text{C}$ ).

### 3. RESULTS

THERMAL EXPANSION / CONTRACTION TEST RESULTS					
Measurement site	Dimensions at ambient ( $23 \pm 2^\circ\text{C}$ )	Difference at -10°C		Difference at 70°C	
		(mm)	(% change)	(mm)	(% change)
A	50.39	0.21	- 0.4%	0.29	0.6%
B	52.71	0.26	- 0.5%	0.49	0.9%
C	50.01	0.31	- 0.6%	0.38	0.8%
D	190.1	0.62	- 0.3%	0.48	0.3%
E	190.23	0.6	- 0.3%	1.37	0.7%
F	189.88	0.35	- 0.2%	1.52	0.8%
G	50.06	0.33	- 0.7%	0.3	0.6%
H	52.32	0.44	- 0.8%	0.25	0.5%
I	49.33	0.24	- 0.5%	0.29	0.6%
L1	501	0	- 0.0%	0	0.0%
L2	500	0	- 0.0%	0	0.0%
L3	500	0	- 0.0%	0	0.0%

#### 4. MEASUREMENT SITES

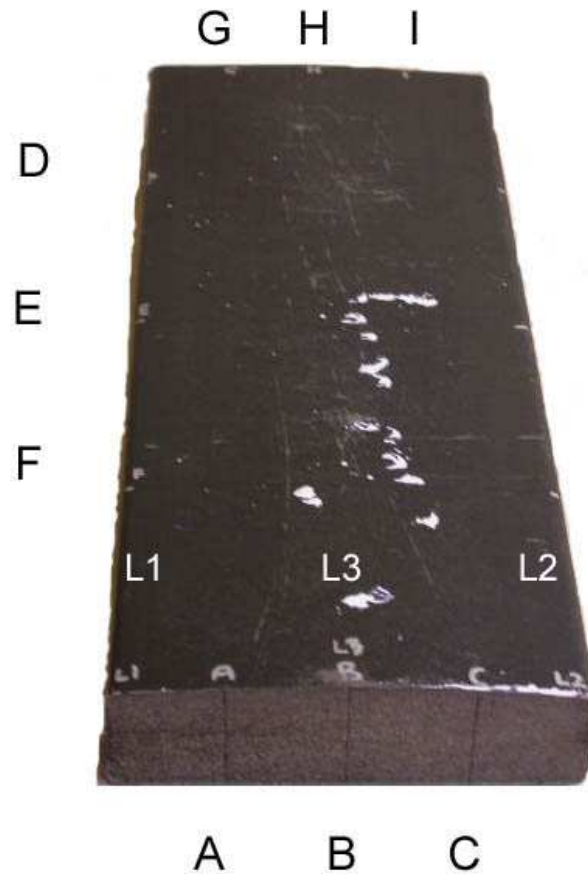


Fig 1: A view of the beam section and measurement locations.