

**Test on extruded reconstituted decking board composite at
25-kW/m² irradiance in accordance with AS/NZS 3837:1998**

Report number FNK 10614

CSIRO job number NK6703

Date of Issue: 23 July 2012

Client

Green Resources Material Australia Pty Ltd

Commercial-in-confidence



CSIRO – Materials Science and Engineering

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SUMMARY

SPONSORED INVESTIGATION REPORT No. FNK 10614

TEST ON EXTRUDED RECONSTITUTED DECKING BOARD COMPOSITE
AT 25-kW/m² IRRADIANCE IN ACCORDANCE WITH AS/NZS 3837:1998

Sample Identification:

Green Resources Material - BioWood

Sponsor:

Green Resources Material Australia Pty Ltd
Unit 2, 74-80 Helen Street
SEFTON NSW
AUSTRALIA

Manufacturers:

PT. Green Resources Material
Latrade Industrial Park, Block E3
Jl. Sei Binti, Tanjung Uncang
BATAM
INDONESIA

Job Number:

NK6703

Test Date:

10 July 2012

Description of Sample:

The sponsor described the tested specimen as extruded reconstituted decking board composite product comprising of wood flour, PVC, and calcium carbonate.

Nominal total thickness: 27 mm
Nominal mass: 20 kg/m²
Colour: light brown

Documentation:

The following documents were supplied by the sponsor as a full and complete description of the sample:

Test Agreement and form FTAF33 dated 21 June 2012.

Conditioning of Specimens:

Prior to the test, the specimens were conditioned to constant mass at a temperature of 23 ± 2°C and a relative humidity of 50 ± 10%.

Test Method:

Tests were performed in accordance with Australian Standard 3837:1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter. All test specimens were exposed in the horizontal orientation with the standard pilot operating.

Nominally 100 x 100-mm specimens were tested as supplied. Specimens were tested with the use of an edge frame. The edge frame reduces the test surface area to 0.0088-m², and this is the area used in calculations. The specimen was restrained using a wire grid.

For the test, specimens were wrapped in aluminium foil so that the four edges and the bottom of the specimen were covered. The foil formed a shallow tray that retained any molten material during testing.

Three specimens were tested at an irradiance level of 25-kW/m².

The nominal exhaust system flow rate for all tests was 0.024-m³/s.

A measured quantity of ethanol was burnt to obtain a C factor to be used in the Heat Release calculations.

Duration of Test:

The test is terminated when any one of the following is applicable:

1. 2 minutes have passed since all flaming from the specimen ceased; and
2. the average mass loss over a 1 minute period has dropped below 150-g/m²;
3. 60 minutes have elapsed; or
4. the specimen fails to ignite after a 10 minute exposure.

Observations:**Specimen 1**

The specimen began to smoke after 30 seconds exposure to the test. The specimen failed to ignite during the test. The test was terminated when 10 minutes had elapsed.

Specimen 2

The specimen began to smoke after 30 seconds exposure to the test. The specimen failed to ignite during the test. The test was terminated when 10 minutes had elapsed.

Specimen 3

The specimen began to smoke after 28 seconds exposure to the test. The specimen failed to ignite during the test. The test was terminated when 10 minutes had elapsed.

Results:

The results of tests as specified in the Standard are summarised in Table 1.

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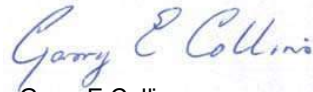
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TESTED BY:



Heherson Alarde
Testing Officer

23 July 2012



Garry E Collins
Manager, Fire Testing and Assessments

Test Details:

Date of test: 10/07/12
 Test Report Date: 23/07/12
 Ethanol burn ('C' factors): 0.045004

	Irradiance (kW/m ²)	Time to sustained burning (s)	Test duration (s)	Thickness (mm)	Specimen mass (g)	Mass remaining (g)	Mass loss (g)	Percent of mass pyrolysed (%)	Average rate of mass loss (g/m ² .s)	Peak HRR (kW/m ²)	Average HRR (first 60s after ign)	Average HRR (first 180s after ign)	Average HRR (first 300s after ign)	Total heat released (MJ/m ²)	Average EHC (MJ/kg)	Average specific extinction area (m ² /kg)
Sample 1	25	n/a	600	27.13	198.15	176.55	21.60	10.90	4.48	5.3	n/a	n/a	n/a	0.88	0.36	281.8
Sample 2	25	n/a	600	27.7	201.62	181.22	20.40	10.12	4.30	16.0	n/a	n/a	n/a	5.25	2.27	313.6
Sample 3	25	n/a	600	27.12	201.68	181.48	20.20	10.02	4.34	17.1	n/a	n/a	n/a	4.29	1.87	333.5
Mean			600.0		200.5	179.8	20.7	10.3	4.4	12.8				3.5	1.5	309.6
SD			0.0		2.0	2.8	0.8	0.5	0.1	6.5				2.3	1.0	26.1

Table 1- Results of tests

Figure 1- Heat Release Rate

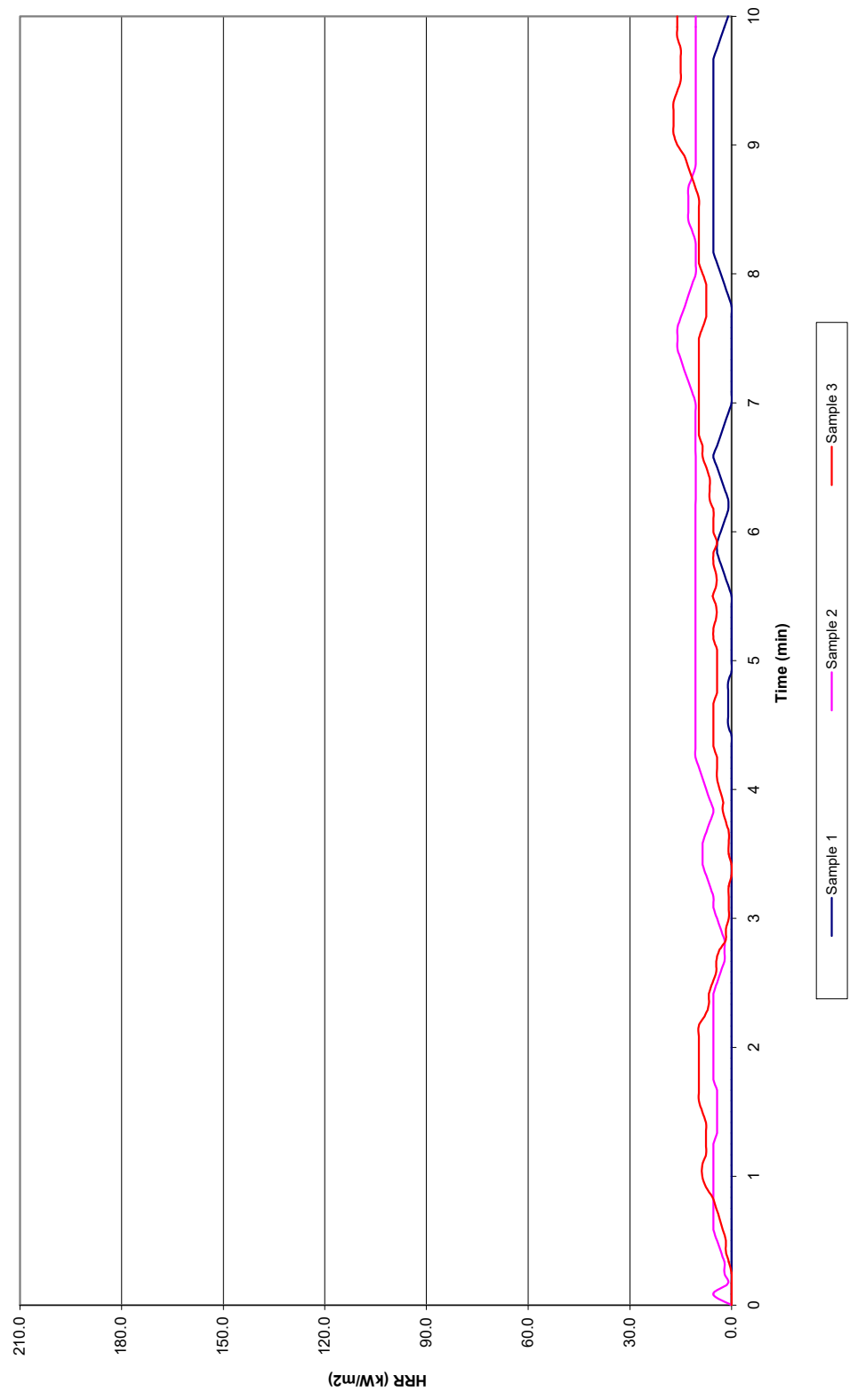
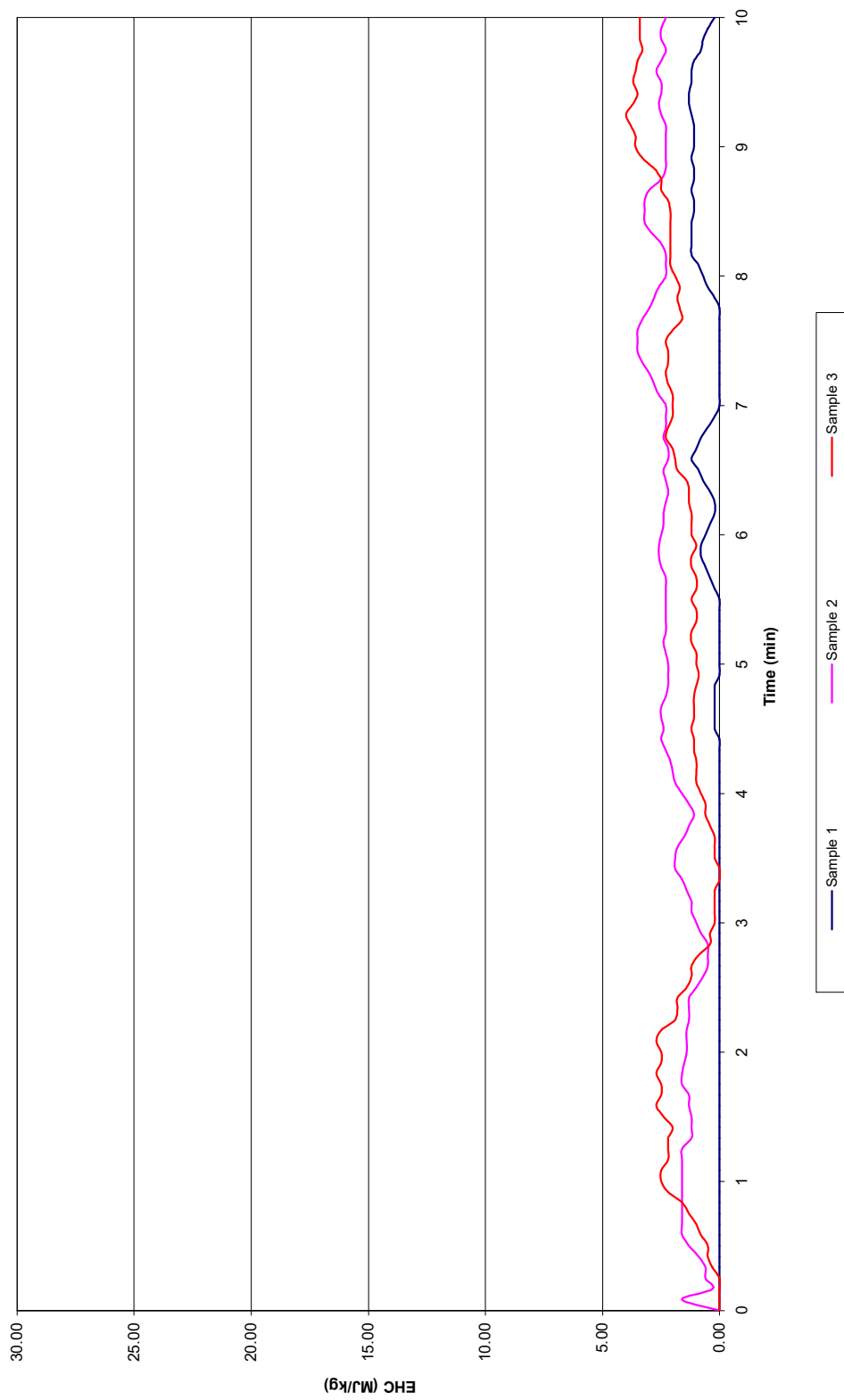




Figure 2- Effective Heat of Combustion



Certificate of Assessment 1-1714

<i>Certificate of Assessment</i>			
NK6703	No 1714		
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This is to certify that the specimen described below was tested by the CSIRO Division of Materials Science and Engineering in accordance with Australian Standard 3959:2009 Construction of Buildings in bushfire-prone areas Appendix F, on behalf of:			
Green Resources Material Australia Pty Ltd Unit 2, 74-80 Helen Street SEFTON NSW AUSTRALIA			
A full description of the test specimen and the complete test results are detailed in the Division's sponsored investigation report numbered FNK 10614.			
SAMPLE IDENTIFICATION:	Green Resources Material - BioWood		
DESCRIPTION OF SAMPLE:	The sponsor described the tested specimen as extruded reconstituted decking board composite product comprising of wood flour, PVC, and calcium carbonate. Nominal total thickness: 27 mm Nominal mass: 20 kg/m ² Colour: light brown		
TEST RESULT:	Maximum Heat Release Rate 17.1 kW/m ² Average Heat Release Rate (first 600s after ignition): 5.7 kW/m ² The specimen <i>satisfies</i> the requirements for bushfire-resisting timber specified in AS 3959:2009 Construction of Buildings in bushfire-prone area Appendix F. The specimen <i>has not</i> been subjected to the weathering procedure of ASTM D 2898 Method B as specified by Appendix F F2(b) of AS 3959. At the discretion of the regulatory authority this material may be approved for use in situations where it is protected from the weather as referenced in Appendix F F2(b) of AS 3959.		
Testing Officer:	Heherson Alarde	Date of Test:	10 July 2012
Issued on the 23 rd day of July 2012 without alterations or additions.			
 Garry E Collins Manager, Fire Testing and Assessments			
 CSIRO Materials Science and Engineering 14 Julius Avenue, Riverside Corporate Park, North Ryde NSW 2113 AUSTRALIA Telephone: 61 2 9490 5444 Facsimile: 61 2 9490 5555			