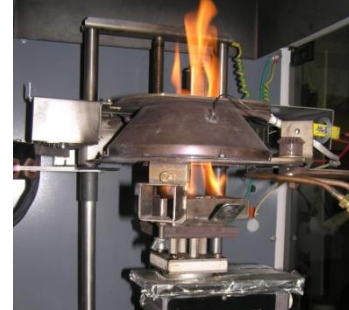




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# FIRE TEST REPORT

## FH 5205

### CONE CALORIMETER TEST AND NCC SPECIFICATION C1.10 PERFORMANCE OF NOVA TILE-TEXTURE

#### CLIENT

Boral Australian Gypsum Ltd  
251 Salmon Street  
Port Melbourne  
VIC 3207  
Australia



International Accreditation New Zealand (IANZ) has a Mutual Recognition Agreement (MRA) with the National Association of Testing Authorities, Australia (NATA). Users of test reports are recommended to accept test reports in the name of either accrediting body.

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# TEST SUMMARY

## Objective

To conduct cone calorimeter testing and reduce the data in accordance with AS/NZS 3837 on client supplied specimens for the purposes of determination of the Group Classifications in accordance with;

- National Construction Code (NCC) Volume One Specifications C1.10 and A 2.4 of the Building Code of Australia (BCA).

## Test sponsor

Boral Australian Gypsum Ltd  
251 Salmon Street  
Port Melbourne  
VIC 3207  
Australia

## Description of test specimen

The product submitted by the client for testing was identified by the client as Nova Tile-Texture, comprising a 9 mm Plasterboard tile laminated with a white textured PVC film on the exposed side and foil film on the unexposed side.

## Date of test

6<sup>th</sup>, 20<sup>th</sup> and 21<sup>st</sup> of May 2013

For the purposes of compliance with the respective building code documents, the following classification is considered applicable to the tested sample as described in Section 1.

Building Code Document	Group Number Classification
NCC Specifications C1.10 and A 2.4	1 Smoke less than 250 m <sup>2</sup> /kg

## 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.



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IANZ Approved Signatory

## DOCUMENT REVISION STATUS

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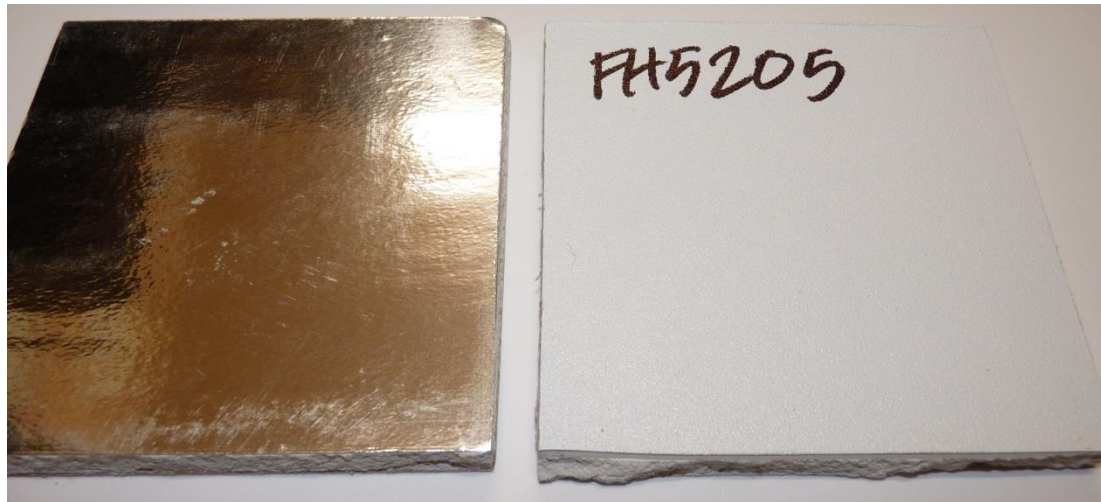
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# 1. GENERAL

The product submitted by the client for testing was identified by the client as Nova Tile-Texture, comprising a 9 mm Plasterboard tile laminated with a white textured PVC film on the exposed side and foil film on the unexposed side. Figure 1 illustrates a representative specimen of that tested.

**Figure 1 Representative specimen (unexposed face left, exposed right)**



## 1.1 Sample measurements

The following physical parameters were measured for each specimen prior to testing.

Specimen ID	Initial properties		Overall apparent density (kg/m <sup>3</sup> )
	Mass (g)	Mean thickness (mm)	
FH5205-50-1	76.1	9.1	833
FH5205-50-2	75.2	9.1	823
FH5205-50-3	77.1	9.1	847

## 2. EXPERIMENTAL PROCEDURE

### 2.1 Test standard

The tests were carried out and data reduced according to the test procedures described in AS/NZS 3837:1998 'Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter'; (the test standard). The sample preparation and test procedure were as described in 2.4 and 2.5.

### 2.2 Test date

The tests were conducted on 6<sup>th</sup>, 20<sup>th</sup> and 21<sup>st</sup> May 2013 by Mr Peter Collier and Mr Lukas Hersche at BRANZ Limited laboratories, Judgeford, New Zealand.

### 2.3 Specimen conditioning

All specimens were conditioned to moisture equilibrium (constant weight), at a temperature of  $23 \pm 2^{\circ}\text{C}$  and a relative humidity of  $50 \pm 5\%$  immediately prior to testing.

### 2.4 Specimen wrapping and preparation

All tests were conducted and the specimens prepared in accordance with the test standard. The spark igniter and the stainless steel retainer frame were used. All specimens were wrapped in a single layer of aluminium foil, covering the unexposed surfaces.

### 2.5 Test programme

The test program consisted of three replicate specimens as identified in the above table, tested at an irradiance level of  $50 \text{ kW/m}^2$ . All tests were carried out with the specimen horizontal, and with a nominal duct flow rate of  $0.024 \text{ m}^3/\text{s}$ .



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### 3. TEST RESULTS AND REDUCED DATA

#### 3.1 Test results and reduced data – NCC C1.10

Material	Test specimens as described in Section 1 (in accordance with AS/NZS 3837)			Mean	
	Specimen test number	FH5205-50-1	FH5205-50-2		FH5205-50-3
Time to sustained flaming	s	39.0	38.0	39.0	39
Observations <sup>a</sup>		-	-	-	
Test duration <sup>b</sup>	s	320*	398*	422*	380
Mass remaining, mf	g	64.0	60.4	61.0	61.8
Mass pyrolyzed	%	15.9%	19.7%	20.8%	18.8%
Specimen mass loss <sup>c</sup>	kg/m <sup>2</sup>	1.3	1.6	1.7	1.5
Specimen mass loss rate <sup>c</sup>	g/m <sup>2</sup> .s	8.7	11.3	12.5	10.8
Heat release rate					
peak, $\dot{q}_{max}''$	kW/m <sup>2</sup>	138.7	105.5	118.2	120.8
average, $\dot{q}_{avg}''$					
Over 60 s from ignition	kW/m <sup>2</sup>	32.2	28.3	24.7	28.4
Over 180 s from ignition	kW/m <sup>2</sup>	13.2	16.3	10.4	13.3
Over 300 s from ignition	kW/m <sup>2</sup>	7.9	11.6	6.3	8.6
Total heat released	MJ/m <sup>2</sup>	2.4	3.7	1.9	2.6
Average Specific Extinction Area	m <sup>2</sup> /kg	51.2	40.1	38.4	43.2
Effective heat of combustion <sup>d</sup> , $\Delta h_{c,eff}$	MJ/kg	1.7	2.2	1.0	1.7

Notes :

<sup>a</sup> no significant observations were recorded

<sup>b</sup> determined by \* average mass loss over 1 minute dropped below 150 g/m<sup>2</sup>  
 \*\* two minutes after flameout or other signs of combustion cease  
 \*\*\* 60 minutes have elapsed

<sup>c</sup> from ignition to end of test;

<sup>d</sup> from the start of the test

+ value calculated using data beyond the official end of test time according to the test standard.



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## 4. SUMMARY

The test standards requires that the mean heat release rate (HRR) readings over the first 180 s from ignition for the three specimens should differ by no more than 10% of the arithmetic mean of the three readings. In the event of this criterion not being met, a further three specimens are required to be tested.

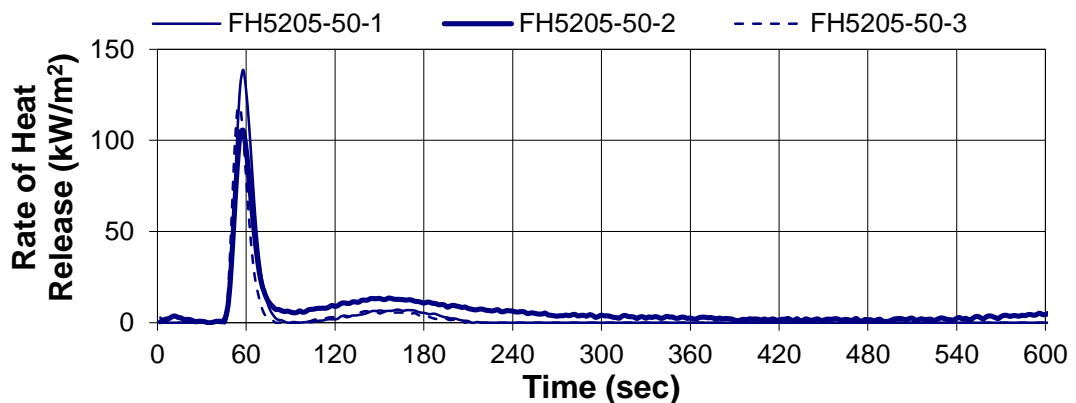
Specimen ID	Average HRR over 180s from ignition	Arithmetic mean	% difference from the arithmetic mean
FH5205-50-1	13.2	13.3	-0.8%
FH5205-50-2	16.3		22.5%
FH5205-50-3	10.4		-21.7%

The above table identifies two of the specimens exposed to 50 kW/m<sup>2</sup> irradiance exceeded the acceptance criteria. Although two of the specimens were outside of the variability criteria of the test standard, the same Group number Classification was determined for each specimen. A further set of three tests as required by the test standard was deemed not to be necessary and would not be expected to lead to an alteration of the classification.

The report summary for the specimens as described in Section 1, exposed to an irradiance of 50 kW/m<sup>2</sup> is:

Mean Specimen thickness (mm)	Irradiance (kW/m <sup>2</sup> )	Mean Time to Ignition (s)	Mean Peak Heat Release Rate (kW/m <sup>2</sup> )	Average Specific Extinction Area (m <sup>2</sup> /kg)
9.1	50	39	120.8	43.2

Figure 2 Rate of heat release verses time



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## 5. CLASSIFICATION IN ACCORDANCE WITH NCC VOLUME ONE SPECIFICATION C1.10

Calculations were carried out according to Specification A2.4. The classification for the specimens as described in Section 1 is as follows:

	Sample 1	Sample 2	Sample 3	Classification
Group number Classification	1	1	1	1

The average specific extinction area for the sample is less than the 250 m<sup>2</sup>/kg limit and therefore it may be used in buildings without a sprinkler system complying with Specification E1.5 in accordance with Specification C1.10 Table 2.

## 6. CONCLUSION

The cone calorimeter testing was carried out on the specimens as described in Section 1. For the purposes of compliance with the NCC Volume One Specification C1.10 for the Classification of Fire Performance of Wall and Ceiling Lining Materials, the following classification is considered applicable to the material as described in Section 1.

<b>Group Number Classification</b>	<b>1</b>
The average specific extinction area was less than the 250 m <sup>2</sup> /kg limit.	



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