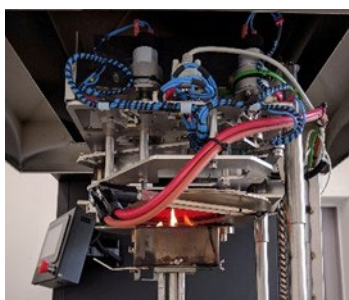




BRANZ Fire Test Report

FH20552-02-1

CONE CALORIMETER TEST OF REALISTIC WALL PANELS IN ACCORDANCE WITH ISO 5660

CLIENT

Linnovate Space Limited
127 Trigg Road
Kumeu
Auckland, 0891
New Zealand



All tests and procedures reported herein, unless indicated, have been performed in accordance with the laboratory's scope of accreditation



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TEST SUMMARY

Objective

To conduct cone calorimeter testing and reduce the data in accordance with:

- ISO 5660:2002 Parts 1 and 2

The testing was carried out to provide data for the Calculation of a Group Number in accordance with NZBC Verification Method C/VM2 Appendix A.

Test sponsor

Linnovate Space Limited
127 Trigg Road
Kumeu
Auckland, 0891
New Zealand

Description of test specimen

The product is described by the client as Realistic Wall Panel, a decorative panel composed of a textured polyester resin fibreglass and stone powder. Samples were supplied in Rustic Brick and Textured Rock variants and were tested loose-laid on 10 mm plasterboard substrate. The finish is a water-based paint.

Date of tests

17th April, 13th & 18th June, and 2nd July 2025

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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SIGNATORIES



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DOCUMENT REVISION STATUS

ISSUE NO.	DATE ISSUED	DESCRIPTION	AUTHOR	REVIEWER
1	10/07/2025	Initial Issue	LMG	LQG



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1. GENERAL

1.1 Sample description

The product submitted by the client for testing was identified by the client as Realistic Wall Panel, a decorative panel composed of a textured polyester resin fibreglass and stone powder. Samples were supplied in Rustic Brick and Textured Rock variants and were tested loose-laid on 10 mm plasterboard substrate. The finish is a water-based paint. Figures 1 to 2 illustrate representative specimens of those tested.

Figure 1: Representative specimen of Rustic Brick (Exposed face on left, edge view centre, reverse face on right)

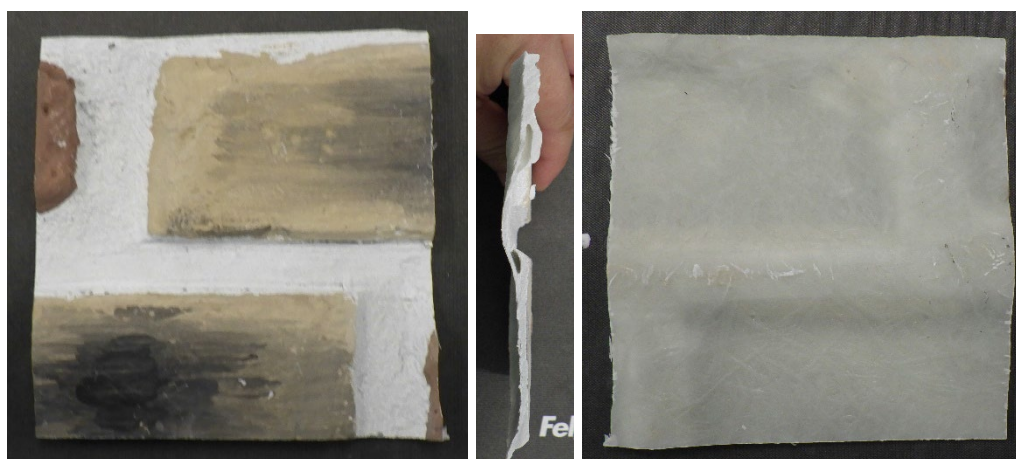


Figure 2: Representative specimen Textured Rock (Exposed face on left, reverse face on right)



1.2 Sample measurements

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

Table 1: Physical parameters

Client ID	Specimen ID	Initial properties			Overall apparent density (kg/m ³)*	Colour
		Mass (g) sample only	Mass (g) incl substrate*	Mean thickness (mm)*		
Rustic Brick	FH20552-1-50-2	36.8	107.8	17.9	602	Mixed
Textured Rock	FH20552-8-50-1	29.1	97.2	18.4	528	Black
	FH20552-8-50-2	29.9	97.9	20.1	487	
	FH20552-8-50-3	27.7	97.8	18.6	526	
	FH20552-8-50-4	38.1	107.5	19.0	566	
	FH20552-8-50-5	30.3	99.6	21.3	468	
	FH20552-8-50-6	35.6	105.5	24.0	440	

*Includes 10 mm plasterboard substate

2. EXPERIMENTAL PROCEDURE

2.1 Test standard

The tests were carried out and data reduced according to the test procedures described in ISO 5660 (2002), Reaction-to-fire tests – Heat release, smoke production and mass loss – Part 1: Heat release rate, and Part 2: Smoke production rate; (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 17th April, 13th & 18th June, and 2nd July 2025 by Lisa Grant 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 two indicative and a further five replicate specimens tested at an irradiance level of 50 kW/m^2 . All tests were carried out with the specimen horizontal, and with a nominal duct flow rate of $0.024 \text{ m}^3/\text{s}$.

2.6 Calculation of heat release without ignition

If a tested specimen does not display ignition, the average heat release rate values are to be calculated from the last negative heat release reading after the test begins.

If the last recorded negative heat release reading is not able to be established as there were multiple negative heat release readings over the course of the test, average values are calculated from the first positive heat release reading after the start of the test.

2.7 Specimen selection

BRANZ was not involved in the selection of the materials submitted for testing. The test materials used were supplied to the laboratory by the client. The plasterboard substrate was supplied by BRANZ.



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3. INDICATIVE TEST RESULTS

Indicative tests were conducted on specimens FH20552-1-50-2 and FH20552-8-50-4.

Table 2: Indicative test results and reduced data

Specimen ID	Irradiance (kW/m ²)	Time to Ignition (s)	Peak Heat Release Rate (kW/m ²)	Total Heat Released (MJ/m ²)	Mean Average Specific Extinction Area (m ² /kg)
FH20552-1-50-2	50	32	359.6	47.2	285.7
FH20552-8-50-4	50	30	365.5	52.8	337.0

Note: Shaded row - Specimen 1 result for replicate test sample.

All Specimens tested adhered to 10 mm plasterboard substrate

As shown in Table 2 above, sample FH20552-8-50-4 of the Textured Rock variant had a higher peak and total heat release and exhibited faster time to ignition than FH20552-1-50-2 and was selected for replicate testing to represent both products.

4. TEST RESULTS AND REDUCED DATA

4.1 Test results and reduced data – ISO 5660

The test results obtained for the Textured Rock veneer, as described in Section 1, are presented in Table 3 below. The data has been reduced in accordance with Section 2.1.

Table 3: Test results and reduced data – ISO 5660

Material	Test specimens as described in Section 1						Mean
Specimen test number	FH20552-8-50-4	FH20552-8-50-1	FH20552-8-50-3	FH20552-8-50-2	FH20552-8-50-5	FH20552-8-50-6	
Test Date	13/06/2025	18/06/2025	18/06/2025	2/07/2025	2/07/2025	2/07/2025	
C-Factor	0.0432	0.0437	0.0437	0.0417	0.0417	0.0417	0.0426
Time to sustained flaming s	30	18	27	28	28	30	27
Observations	Refer to Table 4						
Test duration ^a s	1148*	1228*	870*	1234*	1310*	1298*	1181
Mass remaining, m_f g	72.1	67.4	67.7	66.9	68.3	71.4	69.0
Mass pyrolyzed %	32.9	30.6	30.8	31.6	31.4	32.4	31.6
Specimen mass loss ^b kg/m ²	4.0	3.4	3.4	3.5	3.5	3.8	3.6
Specimen mass loss rate ^b g/m ² .s	3.6	2.8	4.0	2.9	2.7	3.0	3.2
Heat release rate							
peak, $\dot{q}_{\max}''$ kW/m ²	371.8	377.3	416.7	391.7	395.2	373.9	387.8
average $\dot{q}_{\text{avg}}''$							
Over 60 s from ignition kW/m ²	286.2	264.2	319.9	299.7	293.7	286.5	291.7
Over 180 s from ignition kW/m ²	208.3	172.8	199.7	174.4	176.3	206.8	189.7
Over 300 s from ignition kW/m ²	148.4	113.3	130.7	116.3	116.0	144.4	128.2
Over 600 s from ignition kW/m ²	83.1	61.1	68.9	62.7	62.3	80.0	69.7
Total heat released MJ/m ²	53.7	40.3	42.2	40.8	41.1	52.0	45.0
Average Specific Extinction Area m ² /kg	337.0	288.3	312.1	293.6	275.1	321.0	304.5
Effective heat of combustion ^c , $\Delta h_{c,\text{eff}}$ MJ/kg	13.4	12.0	12.4	11.6	11.6	13.5	12.4
Total smoke production							
Non-flaming $S_{A,1}$ m ² /m ²	4.7	1.5	4.4	4.1	4.0	3.5	3.7
Flaming $S_{A,2}$ m ² /m ²	1354.2	987.7	1068.0	1047.6	976.4	1248.5	1113.7
Total $S_A = S_{A,1} + S_{A,2}$ m ² /m ²	1358.8	989.2	1072.4	1051.7	980.4	1252.0	1117.4

Notes: ^a determined by *X O₂ returns to the pretest value within 100 parts per million of oxygen concentration for 10 mins

^b from ignition to end of test; ^c from the start of the test



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4.2 Observations

Table 4: Observations and incidents recorded during testing

Sample ID	Time (s)	Description
FH20552-8-50-4	20	Audible crackling sounds heard coming from specimen
	30	Ignition and sustained flaming observed
	563	Sample extinguished and spark igniter reinserted
FH20552-8-50-1	18	Ignition and sustained flaming observed
	400	Sample extinguished and spark igniter reinserted
FH20552-8-50-3	26	Audible crackling sounds heard coming from specimen
	27	Ignition and sustained flaming observed
	262	Sample extinguished and spark igniter reinserted
FH20552-8-50-2	28	Ignition and sustained flaming observed
	389	Sample extinguished and spark igniter reinserted
FH20552-8-50-5	28	Audible crackling sounds heard coming from specimen, Ignition and sustained flaming observed
	350	Sample extinguished and spark igniter reinserted
FH20552-8-50-6	24	Audible crackling sounds heard coming from specimen
	30	Ignition and sustained flaming observed
	468	Sample extinguished and spark igniter reinserted

5. VARIABILITY ANALYSIS

The test standards require that the mean heat release rate (HRR) readings over the first 180 seconds 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. Specimens which do not ignite have values calculated as detailed in Section 2.6. Table 5 presents the HRR results for each specimen and their comparison with the arithmetic mean:

Table 5: Heat release rate

Specimen ID	Average HRR over 180 s from ignition	Arithmetic mean	% difference from the arithmetic mean
FH20552-8-50-4	208.3	193.6	7.6
FH20552-8-50-1	172.8		-10.8
FH20552-8-50-3	199.7		3.1

Table 5 identifies that one of the specimens exposed to 50 kW/m² irradiance was out with the acceptance criteria, therefore a further three specimens were required. Results for all six specimens are collected in Table 6 below.

Table 6: Heat release rate for six specimens

Specimen ID	Average HRR over 180 s from ignition	Arithmetic mean	% difference from the arithmetic mean
FH20552-8-50-4	208.3	189.7	9.8
FH20552-8-50-1	172.8		-8.9
FH20552-8-50-3	199.7		5.3
FH20552-8-50-2	174.4		-8.1
FH20552-8-50-5	176.3		-7.1
FH20552-8-50-6	206.8		9.0

6. SUMMARY

The report summary for the specimens as described in Section 1, exposed to an irradiance of 50 kW/m² is given in Table 7 below with rates of heat release illustrated in Figure 3.

Table 7: Report summary

Mean Specimen thickness (mm)	Irradiance (kW/m ²)	Mean Time to Ignition (s)	Mean Peak Heat Release Rate (kW/m ²)	Total Heat Released (MJ/kg)	Average Specific Extinction Area (m ² /kg)
20.2	50	27	387.8	45.0	304.5



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Figure 3: Rate of heat release versus time

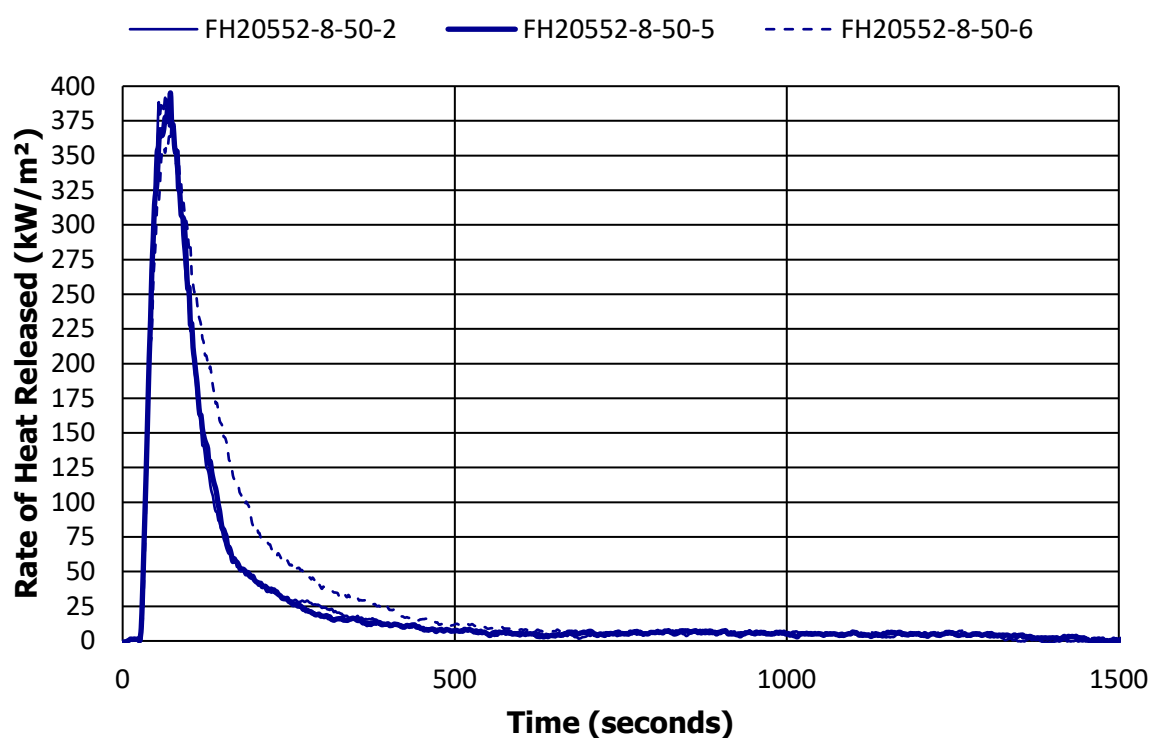
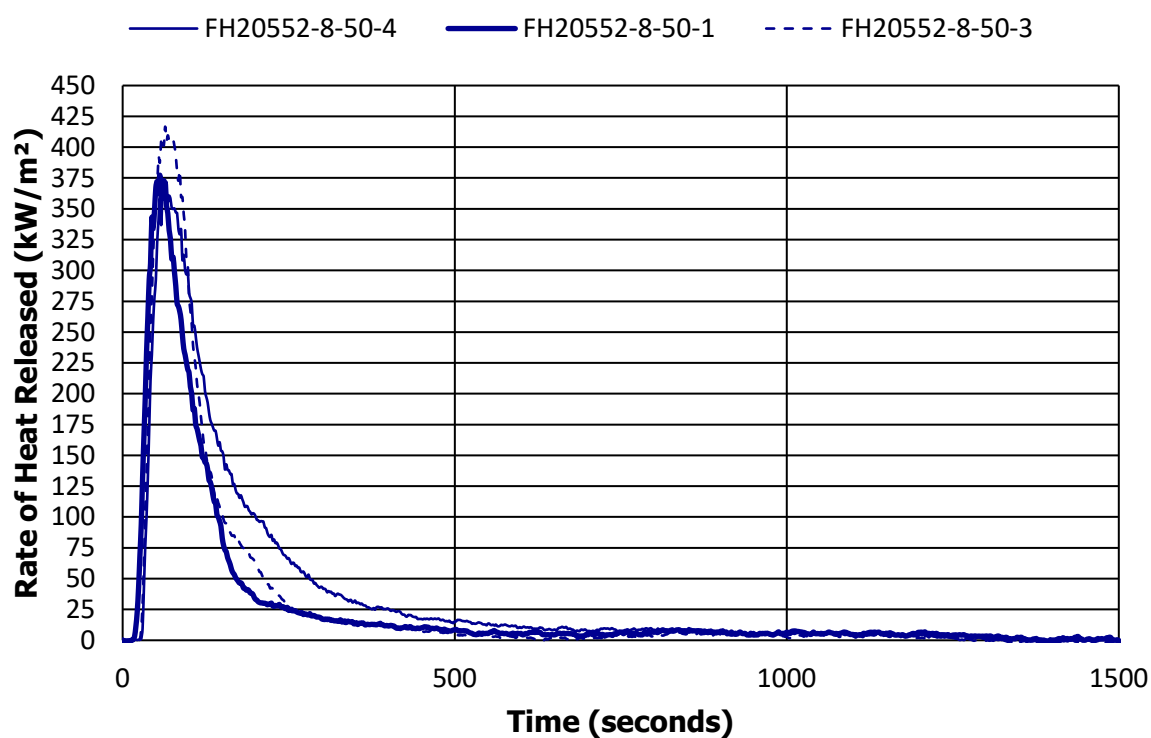
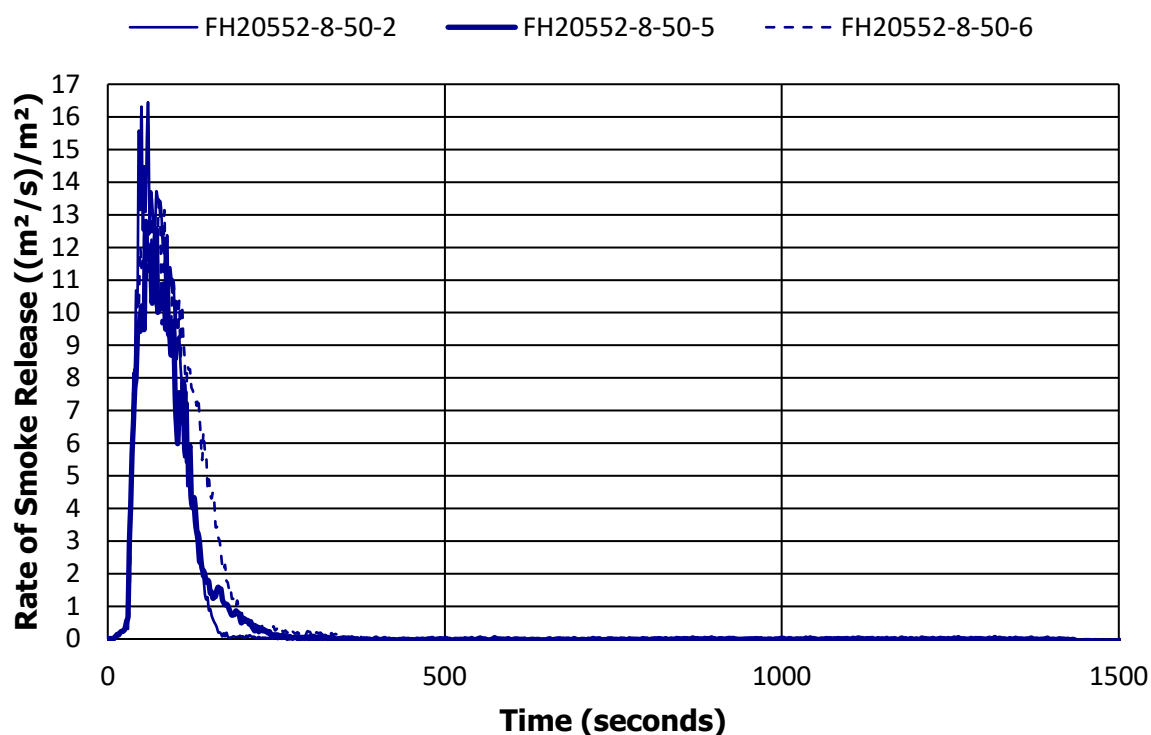
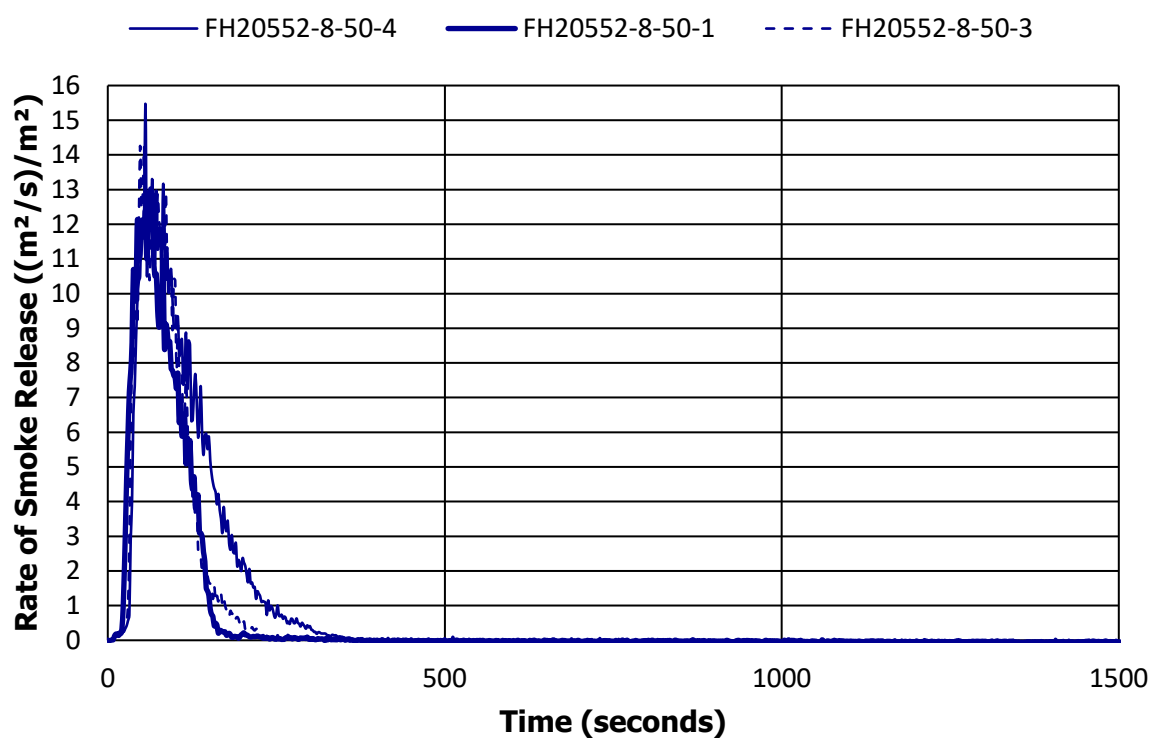


Figure 4: Rate of smoke production versus time



END OF TEST REPORT



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GROUP NUMBER ASSESSMENT



This is to certify that the specimens described below were tested by BRANZ in accordance with ISO 5660 for determination of Group Number classification

Test Sponsor

Linnovate Space Limited
127 Trigg Road
Kumeu
Auckland, 0891
New Zealand

Date of tests

17th April, 13th & 18th June, and 2nd July 2025

Reference BRANZ Test Report

FH20552-02-1 – 10 July 2025

Test specimens as described by the client

Realistic Wall Panels

Decorative panels composed of polyester resin fibreglass and stone powder. Samples were supplied in Rustic Brick and Textured Rock variants and were tested loose-laid on 10mm plasterboard substrate. The finish is a water-based paint.

Specimen ID	Sample Values				Colour
	Mass (g) sample only	Mass (g) incl substrate	Thickness (mm)	Apparent Density (kg/m ³)	
FH20552-1-50-2	36.8	107.8	17.9	602	Mixed
FH20552-8-50-1,2,3,4,5,6*	107.5*	100.9*	20.2*	502*	Black

*Mean values for replicate specimens

Group Number Classification in accordance with the New Zealand Building Code

The specimens were deemed suitable for testing and calculations for establishing a Group Number were carried out in accordance with New Zealand Building Code (NZBC) Verification Method C/VM2 Appendix A.

Classification for the sample as described above is given in the table below.

Building Code Document	Group Number Classification
NZBC Verification Method C/VM2, Amendment 7, Appendix A	3

Regulatory authorities are advised to examine test reports before approving any product.

Issued by



L. M. Grant
Fire Testing Engineer
BRANZ

Reviewed by



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Fire Testing Engineer
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Authorised by



L. Q. Greive
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IANZ Approved Signatory

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