PROFESSIONAL FIRE SAFETY TESTING

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Australian Standard / New Zealand Standard AS/NZS 3837-1998: Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter

Viroc

PRODUCT EVALUATION AND TESTING

IGNL-3069-07 I01 R00

Tested: 11.07.2019
Issued: 12.08.2019

DOCUMENT REVISION HISTORY

Issue	Revision	Date	Purpose of Issue	Prepared by	Reviewed by
01	00 D01	09.08.2019	Issued for internal review	RP	BHB
01	00	12.08.2019	Finalised	BHB	FW

SPONSOR

Modinex Manufacturing Pty Ltd
PO Box 5043
Brassall QLD 4305

Test Technicians

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SIGNATORY

Authorised by
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MFireSafety (UWS), BEng (UTS), GradDipBushFire (UWS), DipEngPrac (UTS), DipEng (CIT)

CONTACT INFORMATION and LOCATION OF TESTING

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1. TEST SUMMARY

General information

Trade Name: Viroc
Manufacturer: Modinex Manufacturing Pty Ltd
Sample Description: Red/Brown cement board

Sponsor: Modinex Manufacturing Pty Ltd, PO Box 5043, Brassall QLD 4305
Specimen Identification code: 3069-07

Spcimen Installatuion:

Test Date: 11/07/2019
Expiry Date: 11/07/2024
Issue Date: 9/08/2019
Project Number: 3069-00-07
Test Type: Full

Input

Test Heat Flux (kW/m²)	50.0								
			Sp 1	Sp 2	Sp 3	Sp 4	Sp 5	Sp 6	Mean
Thickness (mm)			11.75	11.49	11.47	-	-	-	11.57
Surface Area (m²)	A_s		0.00884	0.00884	0.00884	-	-	-	0.00884
Mass before the Test (g)	m_i		155.8912	156.6955	151.4432	-	-	-	154.6766
Mass after the Test (g)	m_f		114.7893	114.4164	108.5689	-	-	-	112.5916
Time to Ignition (sec)	t_{ig}		482	418	301	-	-	-	400.3333
Test start time (sec)	t_{start}		0	0	0	-	-	-	0

Calculation

Density (kg/m³)	ρ		1500.83	1542.71	1493.599	-	-	-	1512.38
Irradiance (kW/m²)			50.38	50.38	50	-	-	-	50.25333
Exhaust System Flow Rate (m³/sec)			0.024	0.024	0.024	-	-	-	0.024
Mass Loss (kg/m²)			4.649528	4.782702	4.850027	-	-	-	4.760752
Average rate of Mass Loss per unit area (g/m².s)			6.90866	8.231846	6.423876	-	-	-	7.188127
Total Mass Pyrolyzed (%)			26.36572	26.98168	28.31044	-	-	-	27.21928
Time to 50kW/m² (sec)	t_{50}	-		571.9	556.7	-	-	-	564.3
Ignitability Index (1/min)	I_{ig}	$60/(t_{50}-t_{start})$	-	0.105	0.108	-	-	-	0.1
Test duration (sec)			1155	999	1056	-	-	-	1070.0

Peak Rate of Heat Release (0-60s)			31.62628	27.87843	27.79689	-	-	-	29.1
Peak Rate of Heat Release (0-180s)			49.60643	53.09308	42.08375	-	-	-	48.3
Peak Rate of Heat Release (0-300s)			49.60643	55.03892	52.47376	-	-	-	52.4
Average Rate of Heat Release (0-60s)			29.08797	24.06916	23.50463	-	-	-	25.6
Average Rate of Heat Release (0-180s)			36.73898	34.26829	30.33365	-	-	-	33.8
Average Rate of Heat Release (0-300s)			37.50557	39.1972	36.14378	-	-	-	37.6
Total Heat Released (MJ/m²)			-	19.72421	30.65213	-	-	-	25.2
Average Effective Heat of Combustion (MJ/kg)	$\Delta h_{c,eff(avg)}$		3.623344	3.865714	6.312287	-	-	-	4.6
Average Specific Extinction Area (m²/kg)	$\sigma_{f(avg)}$		0.007789	0.017273	0.003712	-	-	-	0.0

Rate of Heat Release Index (m=0.34)	I_{Q1}		-	2862.833	3706.228	-	-	-	3284.5
Rate of Heat Release Index (m=0.93)	I_{Q2}		-	351.1557	355.6881	-	-	-	353.4
Integral Limit at 10 min	$I_{Q,\ 10\ min}$	6800 - 540 I_{ig}	-	6743.349	6741.796	-	-	-	6742.6
Integral Limit at 2 min	$I_{Q,\ 2\ min}$	2475 - 165 I_{ig}	-	2457.69	2457.215	-	-	-	2457.5
Integral Limit at 12 min	$I_{Q,\ 12\ min}$	1650 - 165 I_{ig}	-	1632.69	1632.215	-	-	-	1632.5

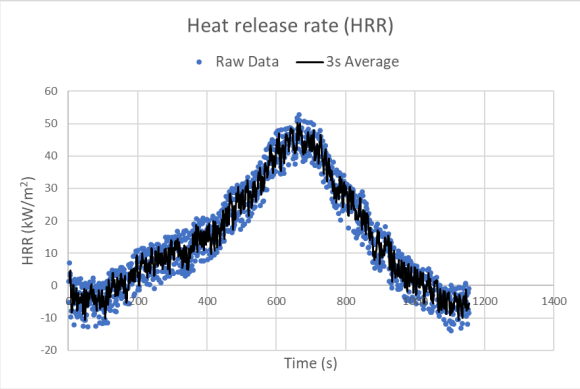
Result

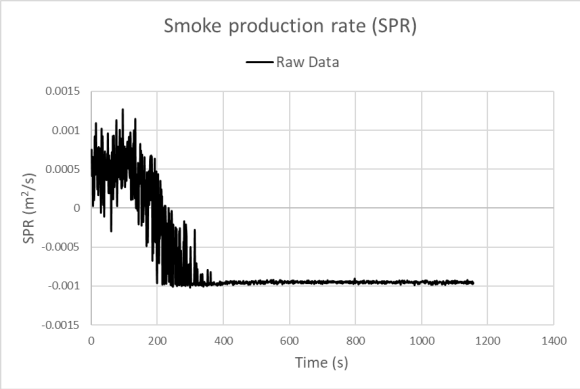
BCA Group Classification Prediction	1	1	1	-	-	-		

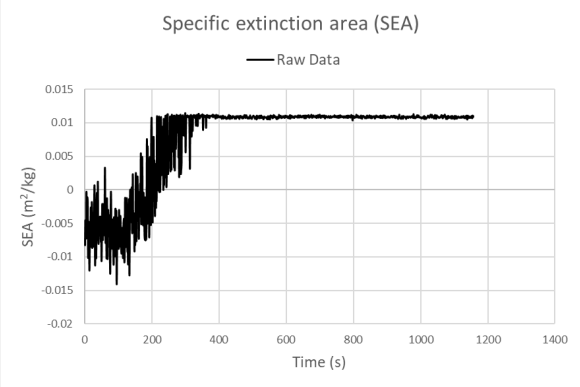
2. TEST PLOTS

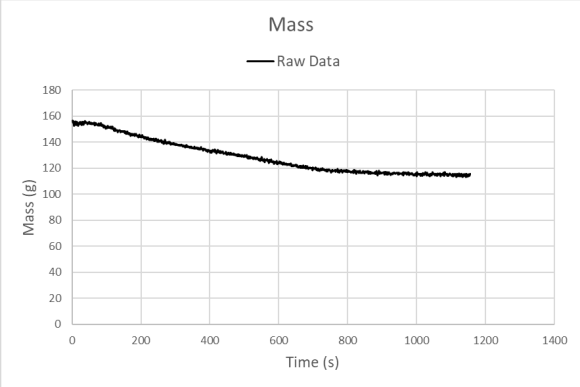
FIGURE 1:

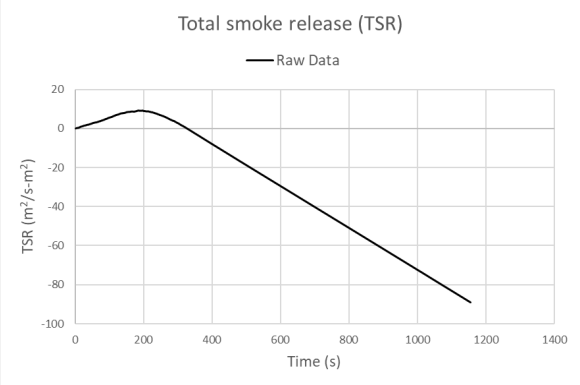
SPECIMEN 1











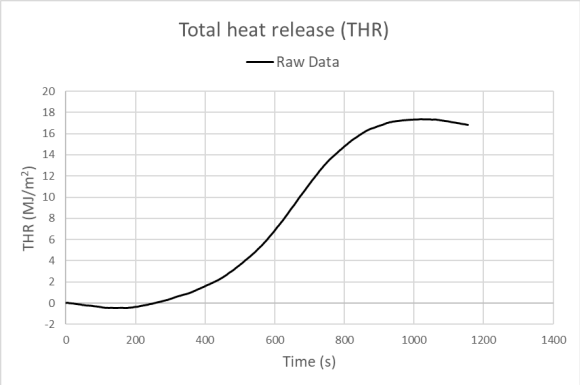
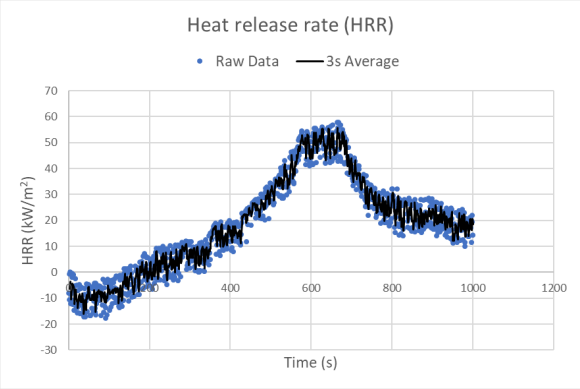
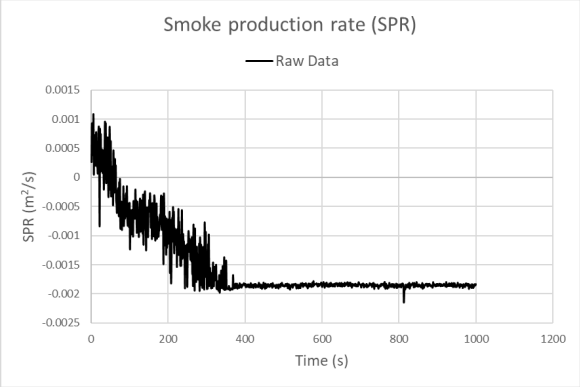
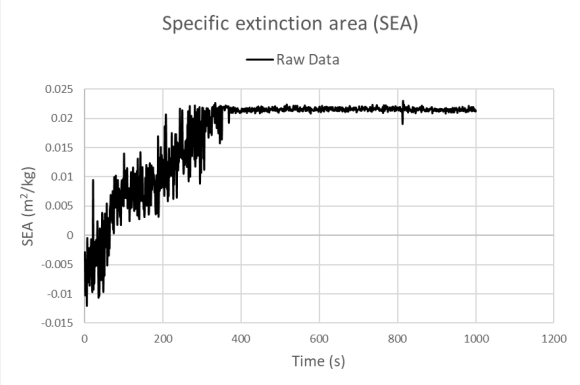


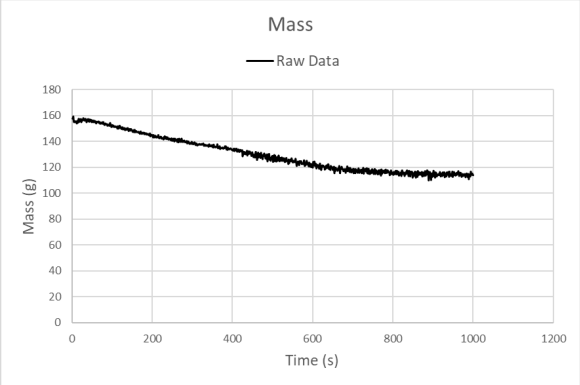
FIGURE 2:

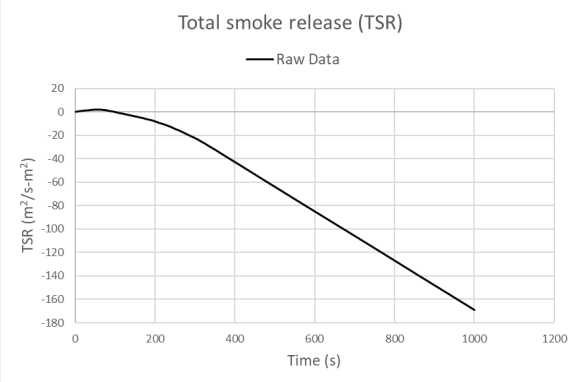
SPECIMEN 2











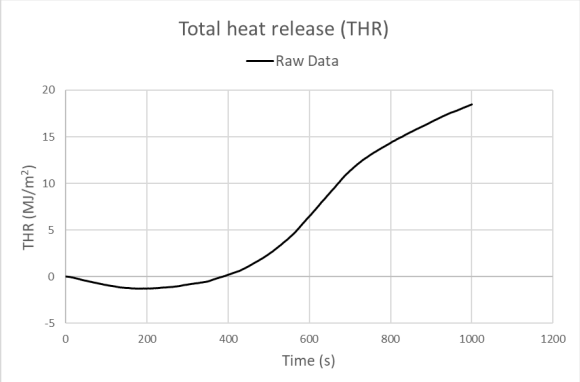
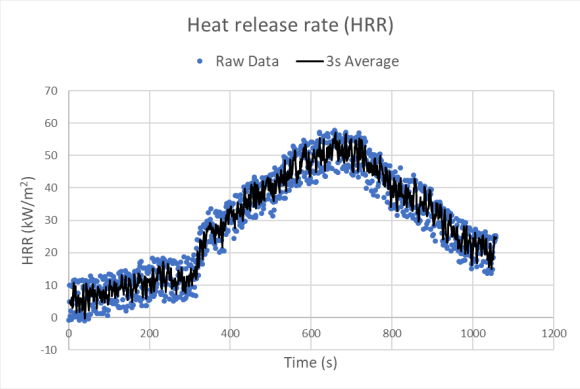
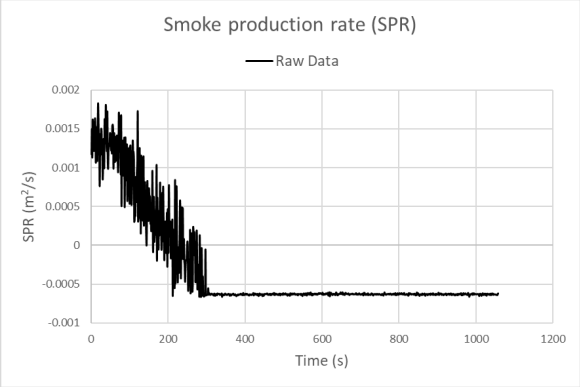
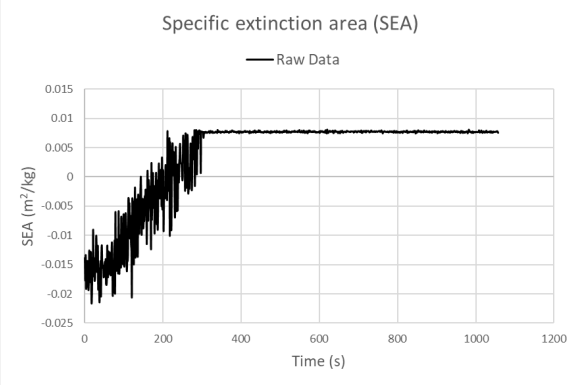


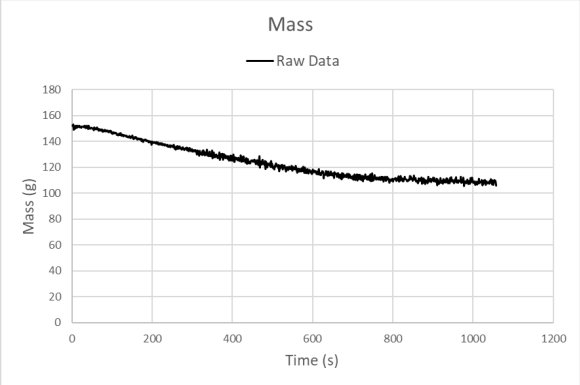
FIGURE 3:

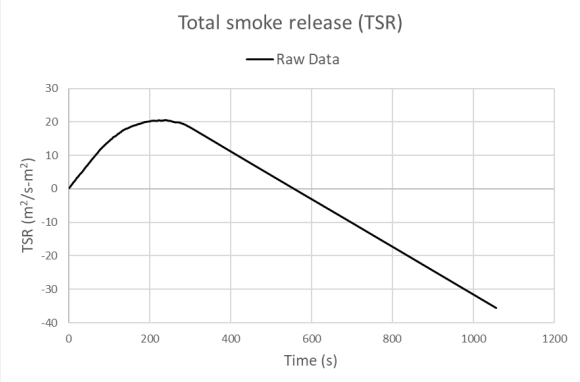
SPECIMEN 3

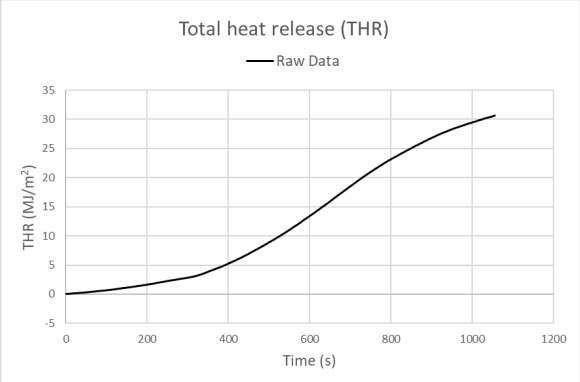












3. APPLICATION OF TEST RESULTS

3.1 TEST LIMITATIONS

The results of this fire test may be used to directly assess fire hazard, but it should be recognized that a single test method will not provide a full assessment of fire hazard under all fire conditions. The results reported herein shall not be used to derive a Group Number in accordance with the NCC without undertaking validation of the performance that is predicted.

3.2 UNCERTAINTY OF MEASUREMENT

Because of the nature of fire hazard property testing and the consequent difficulty in quantifying the uncertainty of measurement of fire hazard properties, it is not possible to provide a stated degree of accuracy of the result.

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