

Reaction to fire test report

Melbourne

Test standard: AS 1530.1:1994(R2016)

Test sponsor: Melbourne Acrylic Coatings Victoria Pty Ltd

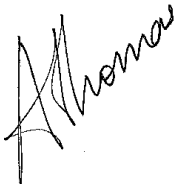


Product: Macrender Coarse FR

Report number: RTF210153

Test date: 24 August, 14 and 15 September 2021

Version: R1.0

Quality management

Version	Date	Summary of amendments including reasons			
R1.0	21 September 2021	Description	Initial issue		
		Name Signature	Prepared by	Reviewed by	Authorised by
			Ananya Thomas	Tanmay Bhat	Tanmay Bhat
					
*Signed for and on behalf of Warringtonfire					

Contents

1.	Introduction	4
2.	Test specimens	4
3.	Test procedure	4
4.	Test results and observations	5
4.1	Test results	5
4.2	Test observations	6
4.3	Combustibility	6
5.	Application of test results	6
5.1	Validity	6
5.2	Uncertainty of measurements	7
Appendix A	Test specimen photographs	8

1. Introduction

This report documents the findings of the reaction to fire test of Macrender Coarse FR in accordance with AS 1530.1:1994(R2016). The testing was done on 24 August, 14 and 15 September 2021.

Warringtonfire Australia Pty Ltd (Warringtonfire) performed the test at the request of the test sponsor listed in Table 1.

Table 1 Test sponsor details

Test sponsor	Address
Melbourne Acrylic Coatings Victoria Pty Ltd	196-200 Hammond Road Dandenong South VIC 3175 Australia

2. Test specimens

The description of the test specimens in Table 2 has been prepared from the information provided by the test sponsor, unless otherwise specified:

- All measurements were taken by Warringtonfire
- All values quoted are nominal

Table 2 Test specimen description

Item	Detail
Product name	Macrender Coarse FR
Material	Fibre reinforced polymer modified cementitious render suitable for application to rigid masonry surfaces. It has a composition of portland cement, re-dispersible polymer powders, reinforcing chopped acrylic fibres, graded sand and workability admixtures.
Average density (before conditioning)	1533 kg/m ³
Average density after conditioning (measured)	1521 kg/m ³
Colour	Whitish grey

3. Test procedure

Table 3 details the test procedure for this reaction to fire test.

Table 3 Test procedure

Item	Detail
Statement of compliance	The test was performed in accordance with the requirements of AS 1530.1:1994(R2016).
Variations	A suitable alternative insulating material was used to fill the annular space between the furnace tubes, as specified in clause 4.2 of ISO 1182:2010. During the tests of specimen 3, 4 and 5, the thermocouples did not reach equilibrium. The tests were ended after 3600 seconds as described in section 7.4.7 of ISO 1182:2010.
Pre-test conditioning	The specimens were conditioned to a constant mass at a temperature of 23 ± 2 °C and a relative humidity of 50 ± 5% until constant mass was achieved, according to EN 13238:2010.

Item	Detail
	After this, the specimens were then conditioned inside a ventilated oven maintained at a temperature of 60 ± 5 °C for 22 hours. The samples were then cooled to room temperature in a desiccator until immediately prior to testing.
Sampling / specimen selection	The test specimens were sampled and supplied by the test sponsor. Warringtonfire was not involved in any selection or sampling procedure.
Number of tests	Five
End of test	During the tests of specimen 3, 4 and 5, the thermocouples did not reach equilibrium. The tests were ended after 3600 seconds as described in section 7.4.7 of ISO 1182:2010.
Test face	Not applicable
Test operator	Ananya Thomas

4. Test results and observations

4.1 Test results

Table 4 shows a summary of the results for the material samples.

Table 4 Test results

Parameter	Symbol or expression	Unit	Results					Arithmetic mean = $\sum \text{results}/5$
			1	2	3	4	5	
Total duration of sustained flaming	Cumulative total of duration of flaming (≥ 5 s)	s	0	0	0	0	0	0
Test duration		s	3600	3600	3600	3600	3600	3600
Specimen mass								
Initial specimen mass	m_{si}	g	115.5	118.5	121.2	117.1	116.7	117.8
Final specimen mass	m_{sf}	g	108.5	110.0	114.7	110.1	109.9	114.7
Mass loss	$\Delta m = (m_{si} - m_{sf})/m_{si}$	%	6.1	7.2	5.4	6.0	5.8	6.1
Furnace thermocouple temperatures								
Initial	T_{fi}	°C	748.4	746.5	748.4	745.6	749.8	747.7
Maximum	T_{fm}	°C	771.5	771.4	755.4	756.5	754.0	761.8
Final	T_{ff}	°C	770.3	769.8	754.9	755.6	753.0	760.7
Temperature rise	$\Delta T_f = T_{fm} - T_{ff}$	°C	1.2	1.6	0.5	0.9	1.0	1.0
Specimen centre thermocouple temperatures								
Maximum	T_{cm}	°C	713.7	716.0	697.4	716.9	705.7	709.9
Final	T_{cf}	°C	713.3	715.8	695.3	716.4	705.4	709.2
Temperature rise	$\Delta T_c = T_{cm} - T_{cf}$	°C	0.4	0.2	2.1	0.5	0.3	0.7
Specimen surface thermocouple temperatures								
Maximum	T_{sm}	°C	783.6	792.6	787.9	794.0	784.4	788.5
Final	T_{sf}	°C	783.0	792.1	787.7	793.7	783.8	788.1
Temperature rise	$\Delta T_s = T_{sm} - T_{sf}$	°C	0.6	0.5	0.2	0.3	0.6	0.4

4.2 Test observations

- For specimens 1 and 2, no discernible change was observed.
- Specimen 3 and 4, displayed several events of intermittent flaming, after around 6 minutes of the start of the test, all of which were less than 3 seconds.
- Specimen 5 displayed intermittent flaming after approximately 7 min after the start of the test

4.3 Combustibility

This material is not deemed combustible according to the test criteria for combustibility specified in clause 3.4 of AS 1530.1:1994 (R2016).

A comparison between the failure criteria and the corresponding results determined from testing is presented in Table 5.

Table 5 Performance criteria

Combustibility Performance Criteria	Measured value	Unit	Result
Mean duration of sustained flaming > 0 s	0	s	Pass
Mean furnace thermocouple temperature rise $\Delta T_f > 50$ °C	1	°C	Pass
Mean specimen surface thermocouple temperature rise $\Delta T_s > 50$ °C	0	°C	Pass

5. Application of test results

5.1 Validity

This document is the original version of this test report and is written in English. In case of doubt the original version prevails over a translation. This document is issued subject to Warringtonfire's standard terms and conditions, which are available at: [Terms and Conditions | Element](#).

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.

Reports are statements of fact prepared in accordance with the referenced version of the standards stated in Section 3 of this report. Reports are based upon the information provided to Warringtonfire. Warringtonfire takes no responsibility for the accuracy or completeness of such information.

The results stated in this report apply to the sample as received. Any differences in composition, production process, thickness, density or colour of the product may significantly affect the performance and will therefore invalidate the application of the test results to the variant product. It is recommended that any proposed variation to the tested configuration or product should be referred to the test sponsor. The test sponsor should then obtain appropriate documentary evidence of compliance from Warringtonfire or another accredited testing authority. The supplier of the product is responsible for ensuring that the product which is supplied for use is identical to the test specimens that were tested.

This report may only be reproduced in full. Extracts or abridgements shall not be published without the express written permission of Warringtonfire.

The report is issued for the benefit of Warringtonfire's direct customer only, and may not be relied upon by any third parties without Warringtonfire's express written consent.

5.2 Uncertainty of measurements

Because of the nature of reaction to fire testing and the consequent difficulty in quantifying the uncertainty of measurements obtained from a reaction to fire test, it is not possible to provide a stated degree of accuracy of the result.

Appendix A Test specimen photographs

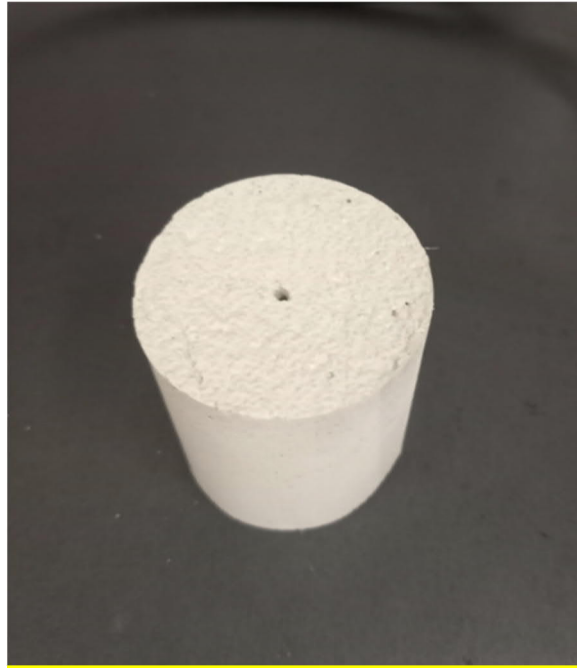


Figure 1: Total view of the specimen prior to testing



Figure 2: Total view of specimen after testing



Registered office:

Warringtonfire Australia Pty Ltd
Registered Company No. ABN 81 050 241 524

Name & address of issuing laboratory:

Warringtonfire Australia Pty Ltd
409-411 Hammond Road, Dandenong South VIC 3175, Australia

Location of performance of laboratory activities:

Warringtonfire Australia Pty Ltd
409-411 Hammond Road, Dandenong South VIC 3175, Australia

Reaction to Fire laboratory locations:

Frankfurt, Germany

DAkkS accredited laboratory D-PL-18354-01-00
T: +49 69 506 089445

Gent, Belgium

BELAC accredited laboratory 196-TEST
T: +32 9 243 77 50

Melbourne, Australia

NATA accredited laboratory 3277
T: +61 3 9767 1000

Warrington, United Kingdom

UKAS accredited laboratory 0249
T: +44 (0) 1925 655 116

General conditions of use

The data, methodologies, calculations and results documented in this report specifically relate to the tested specimen/s and must not be used for any other purpose. This report may only be reproduced in full. Extracts or abridgements must not be published without permission from Warringtonfire.

All work and services carried out by Warringtonfire are subject to, and conducted in accordance with, our standard terms and conditions. These are available on request or at <https://www.element.com/terms/terms-and-conditions>.