

007. FIRE TEST CERTIFICATE



Reaction to fire test report

Melbourne

Test standard: AS 1530.1:1994(R2016)

Test sponsor: Stone Alliance Partnership Pty Ltd /
Anbao Co. Ltd

Product: Glass fibre reinforced concrete

Report number: RTF180295

Test date: 10 and 11 December 2018

Version: R1.1

Warringtonfire, accredited for compliance with ISO/IEC 17025:2017 – Testing



Quality management

Version	Date	Summary of amendments including reasons		
R1.0	9 January 2019	Description	Initial issue	
		Name	Prepared by Emma Richardson	Reviewed by Choose an item.
		Signature	Choose an item.	Choose an item.
		*Signed for and on behalf of Warringtonfire		
R1.1	11 October 2021	Description	Revised issue	
		Name	Prepared by Ananya Thomas	Reviewed by Tanmay Bhat
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Contents

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

1. Introduction

This report documents the findings of the reaction to fire test of Glass fibre reinforced concrete in accordance with AS 1530.1:1994(R2016). The testing was done on 10 and 11 December 2018.

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
Stone Alliance Partnership Pty Ltd / Anbao Co. Ltd	6-8 Churchill Street Silverwater NSW 2128 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.

Table 2 Test specimen description

Item	Detail
Material	Glass fibre reinforced concrete
Photograph of specimen	
Density	1979 kg/m ³
Colour	White with brown and dark grey flecks

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. None of the thermocouples reached equilibrium hence the tests were ended at 3600 seconds as described in section 7.4.7 of ISO 1182:2010.
Pre-test conditioning	The specimens were conditioned inside a ventilated oven maintained at a temperature of 60 ± 5 °C for between 20-24 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	None of the thermocouples reached equilibrium hence the tests were ended at 3600 seconds as described in section 7.4.7 of ISO 1182:2010.
Test face	Not applicable
Test operator	Emma Richardson

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	149.4	146.9	146.8	146.9	150.4	147.7
Final specimen mass	m_{sf}	g	130.9	129.1	128.4	128.9	132.2	129.9
Mass loss	$\Delta m = (m_{si} - m_{sf})/m_{si}$	%	12.4	12.1	12.5	12.3	12.1	12.3
Furnace thermocouple temperatures								
Initial	T_{fi}	°C	753.3	750.1	753.8	751.6	747.7	751.3
Maximum	T_{fm}	°C	763.0	752.5	760.1	756.7	756.8	757.8

Parameter	Symbol or expression	Unit	Results					Arithmetic mean = $\sum \text{results}/5$
			1	2	3	4	5	
Final	T_f	°C	761.8	749.8	756.6	747.1	756.8	754.4
Temperature rise	$\Delta T_f = T_{fh} - T_{ff}$	°C	1.2	2.7	3.5	9.6	0.0	3.4
Specimen centre thermocouple temperatures								
Maximum	T_{cm}	°C	1099.8*	750.3	745.2	736.2	737.9	813.9
Final	T_{cf}	°C	1099.8*	750.3	744.8	736.2	737.9	813.8
Temperature rise	$\Delta T_c = T_{cm} - T_{cf}$	°C	0.0	0.0	0.4	0.0	0.0	0.1
Specimen surface thermocouple temperatures								
Maximum	T_{sm}	°C	773.6	775.8	774.9	769.9	771.4	773.1
Final	T_{sf}	°C	772.7	775.2	774.3	769.2	771.4	772.6
Temperature rise	$\Delta T_s = T_{sm} - T_{sf}$	°C	0.9	0.6	0.6	0.7	0.0	0.6

*The specimen centre thermocouple was found to be not functioning during the test. Hence, the thermocouple was replaced after the test.

4.2 Test observations

No significant observations were noted during the course of testing.

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 4.

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	3	°C	Pass
Mean specimen surface thermocouple temperature rise $\Delta T_s > 50$ °C	1	°C	Pass

5. Application of test results

5.1 Validity

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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.

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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.

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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.

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