

Reaction to fire test report

Warringtonfire Testing and Certification Limited

Test standard: EN 13823:2020

Test sponsor(s): Mould Growth consultants Ltd

Product(s): Sempatap 5mm

Report number: 505164

Test date: 26th August 2021 and 26th October 2021

Version: Two

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

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1. Introduction

This report documents the findings of the reaction to fire test of Sempatap 5mm in accordance with EN 13823:2020.

Warringtonfire Testing and Certification Limited (Warringtonfire) performed the test on 26th August 2021 and 26th October 2021 at the request of the test sponsor listed in Table 1.

Table 1 Test sponsor details

Test sponsor	Address
Mould Growth consultants Ltd	Unit A3 Longmead Business Centre Blenheim Road Epsom, Surrey KT19 9QQ United Kingdom

2. Test specimens

The description of the test specimens is detailed in Table 2. Unless otherwise specified:

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

Warringtonfire was commissioned to modify the test specimens so they met the geometric requirements of the test standard.

Table 2 Test specimen description

General description		Latex foam with coated woven fibreglass face adhered to calcium silicate
Product reference of overall composite		"Sempatap 5mm"
Name of manufacturer of overall composite		Sempatap
Thickness of overall composite		5mm (Stated by sponsor) 4.07mm (Measured by WarringtonFire)
Density / weight per unit area of overall composite		1.5kg/m ² (Stated by sponsor) 1.05kg/m ² (Measured by WarringtonFire)
Scrim	Generic type	Fibreglass
	Product reference	See Note 1 Below
	Name of manufacturer	See Note 1 Below
	Colour reference	"White"
	Thickness	0.5mm
	Weight per unit area	0.08kg/m ²
	Type of weave	See Note 1 Below
	Flame retardant details	See Note 1 Below
Adhesive	Generic type	Polyvinyl Acetate (PVA)
	Product reference	"Sempatap Adhesive"
	Name of manufacturer	See Note 2 Below
	Colour reference	"Off White"
	Application rate	2.5m ² /ltr
	Application method	See Note 1 Below
	Flame retardant details	See Note 3 Below
Curing process	Air drying emulsion	

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Foam	Generic type	Latex
	Product reference	See Note 1 Below
	Name of manufacturer	See Note 1 Below
	Thickness	4.5mm
	Weight per unit area	1.5kg/m ²
	Colour reference	"Off White"
	Flame retardant details	See Note 1 Below
Adhesive	Generic type	Polyvinyl Acetate (PVA)
	Product reference	"Sempatap Adhesive"
	Name of manufacturer	See Note 2 Below
	Colour reference	"Off White"
	Application rate	2.5m ² /ltr
	Application method	See Note 1 Below
	Flame retardant details	See Note 3 Below
	Curing process	Air drying emulsion
Substrate	Product reference	"Promat – Brandschultzbauplatten; Promatect-H"
	Generic type	Calcium Silicate based board
	Name of manufacturer	Promat
	Thickness	12mm
	Density	870kg/m ³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		Liquid latex foam machine applied to fibreglass scrim and heated

Note 1: The sponsor was unable to provide this information.

Note 2: The sponsor of the test has provided this information but at the specific request of the sponsor these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

Note 3: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production.

3. Test procedure

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

Table 3 Test procedure

Item	Detail
Test standard	The test was performed in accordance with EN 13823:2020.
Product standard and/or EAD	EN 15102
Supplementary standard	EN 13501: 2018
EGOLF agreements and/or recommendations	Not applicable
Deviations from the test standard	None
Pre-test conditioning	The test specimens were received on 2nd June 2021. Before testing, the test specimens were conditioned in accordance with the requirements of EN 13238:2010 at a temperature of 23 ± 2 °C and a relative humidity of $50 \pm 5\%$ for a minimum period of 48 hours, until constant mass was achieved.
Sampling / test specimen selection	The test specimens were sampled by the test sponsor. Warringtonfire was not involved in any selection or sampling procedure.
Composite bonded by	Warringtonfire
Supplier of the substrate	Warringtonfire
Supplier of the adhesive	The test sponsor
Intended application	Wall and ceiling panels
Test face	The decorative face of the test specimens was exposed to the heating conditions of the test when the test specimens were mounted in the test position.
Test specimen preparation	The test specimen walls (or wings) were installed in the trolley in accordance with the requirements of section 5.3 of BS EN 13823:2020.
Number of replicate tests	Three

4. Test results and observations

4.1 Test results

Table 4 shows a summary of the results for the test specimens.

Table 4 Test results

Parameter	Unit	Results			
		Specimen 1	Specimen 2	Specimen 3	Mean
Fire spread					
FIGRA (THR(t) threshold of 0.2MJ)	W/s	342	391	424	386
FIGRA (THR(t) threshold of 0.4MJ)	W/s	338	388	424	383
THR _{600s}	MJ	2.4	3.4	4.8	3.5
Lateral flame spread to edge of test specimen?	-	No	No	No	No
Smoke production					
SMOGRA	m ² /s ²	56	71	80	69
TSP _{600s}	m ²	86	64	74	75
Flaming droplets and particles					
Fall of flaming droplets/particles < 10s?	-	No	No	No	No
Fall of flaming droplets/particles > 10s?	-	No	No	No	No

4.2 Test observations

Table 5 shows a list of initial observations noted for every tested specimen.

Table 5 Common specimen observations

Min	Sec	Initial observations for each specimen
0	0	Pre-checks performed on analysers
2	0	Auxiliary burner switched on to check correct burner operating conditions
5	0	Gas flow switched from auxiliary burner to main burner & test flames impinge on specimen

Observations of any significant behaviour of the specimen during the tests are summarised in Table 6 below.

Table 6 Test observations

Min	Sec	Observations during test
Specimen 1		
5	12	Discolouration of the surface of the test specimen occurred in the region of the burner
5	48	Flaming on the surface of the test specimen occurred in the region of the burner
26	0	End of test conditions. All flaming ceased.
Specimen 2		
5	6	Discolouration of the surface of the test specimen occurred in the region of the burner
5	33	Flaming on the surface of the test specimen occurred in the region of the burner
11	54	The surface of test specimen began to delaminate in the region of the burner
26	0	End of test conditions. All flaming ceased.
Specimen 3		
5	6	Discolouration of the surface of the test specimen occurred in the region of the burner
5	33	Flaming on the surface of the test specimen occurred in the region of the burner
26	0	End of test conditions. All flaming ceased.

5. Application of test results

5.1 Validity

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The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use, nor can the results be extrapolated and applied to other products.

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.

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5.2 Uncertainty of measurement

The determination of the uncertainty of measurement of FIGRA, THR600s, SMOGRA and TSP600s is an ongoing topic within CEN. PD CEN/TR 16988: 2016 provides the latest work of the CEN committee tasked with working on this matter. Until this work is finalised the measurement of uncertainty is not reported.

Appendix A Test data

A.1 Heat release rate

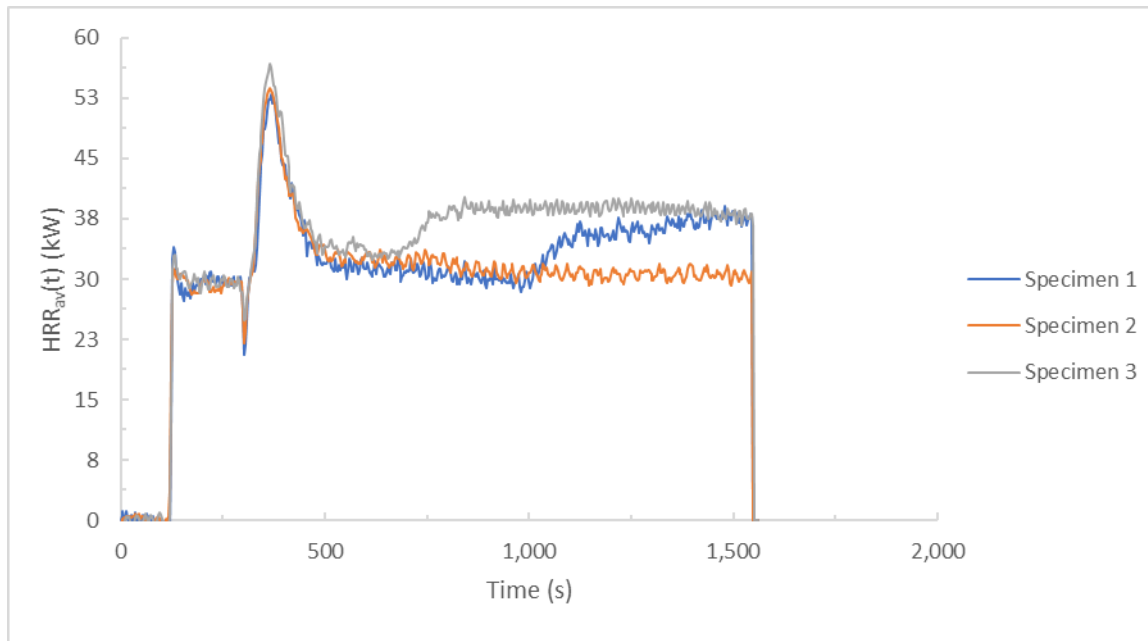


Figure 1 Heat release rate vs time

A.2 Total heat release

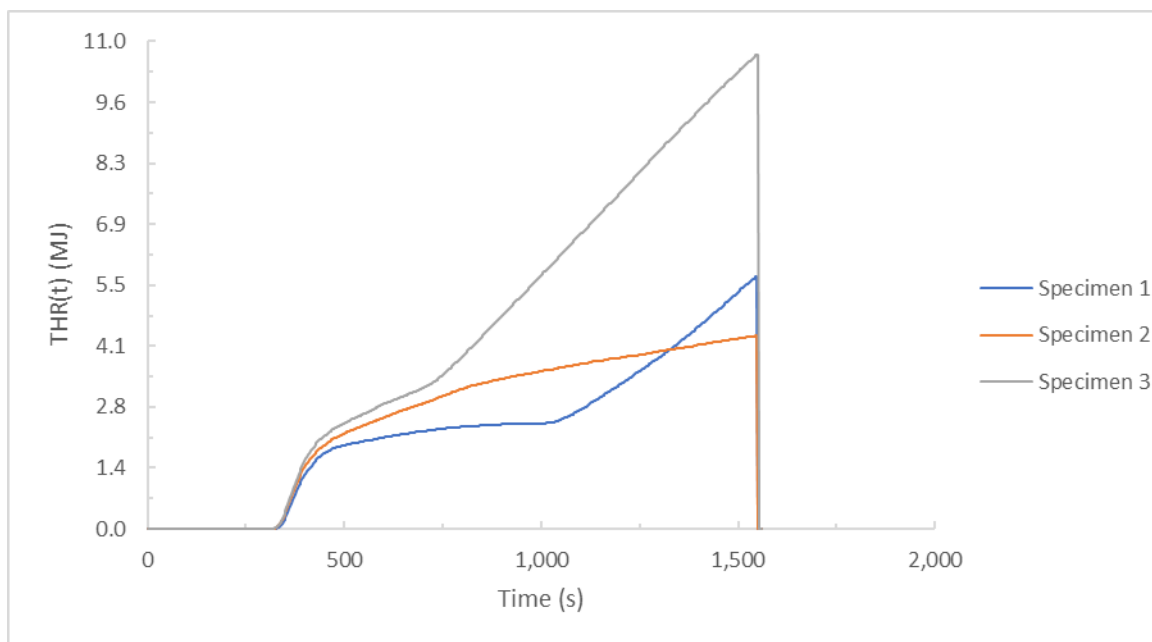


Figure 2 Total heat release vs time

A.3 1000 x HRR_{av} (t) / (t-300)

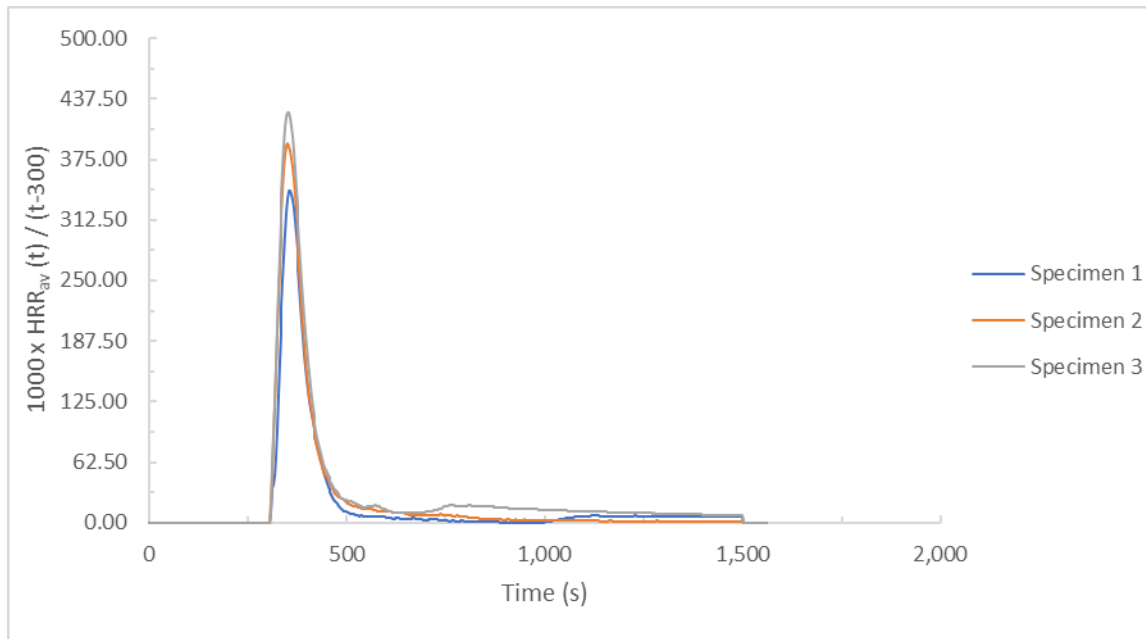


Figure 3 1000 x HRR_{av} (t) / (t-300) vs time

A.4 Smoke production rate

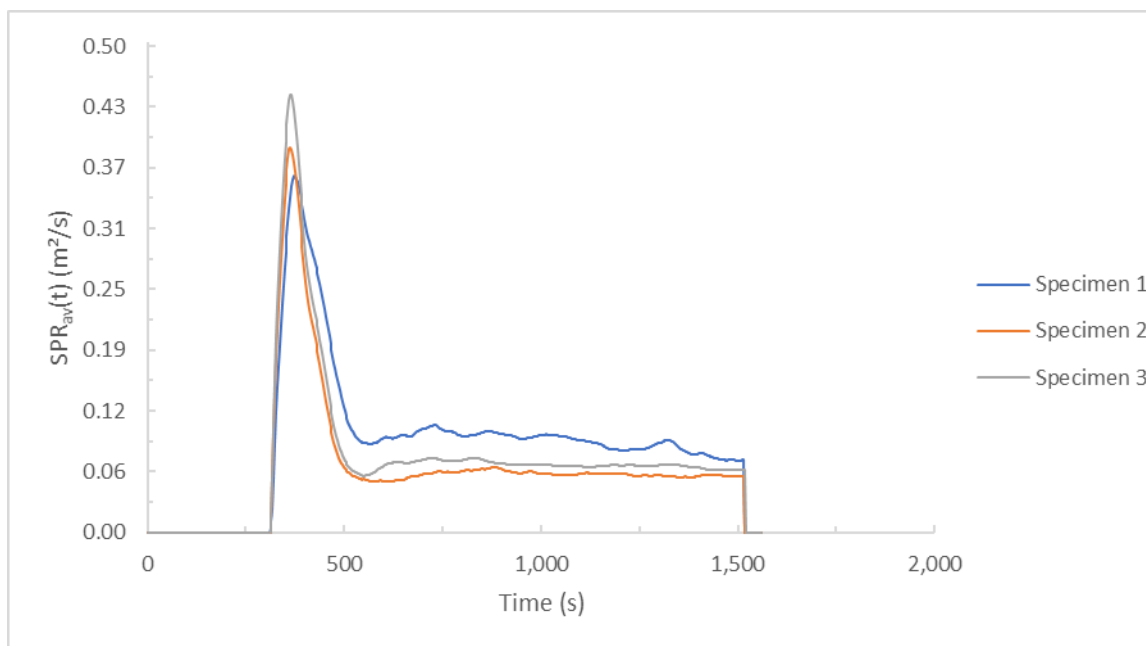


Figure 4 Smoke production rate vs time

A.5 Total smoke production

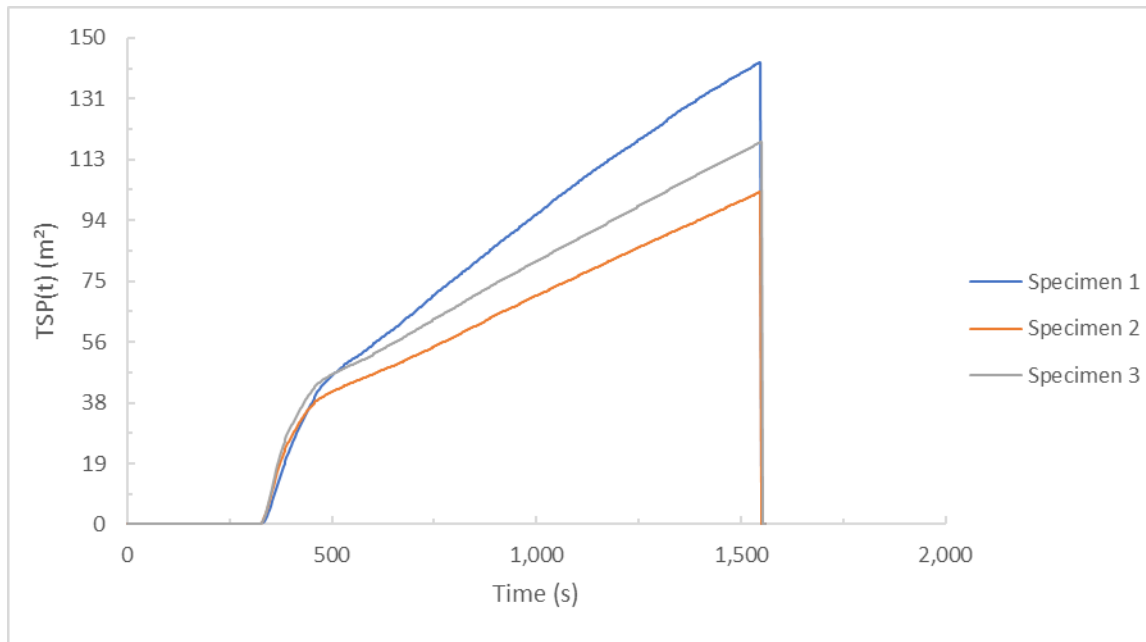


Figure 5 Total smoke production vs time

A.6 $10000 \times \text{SPR}_{\text{av}}(t) / (t-300)$

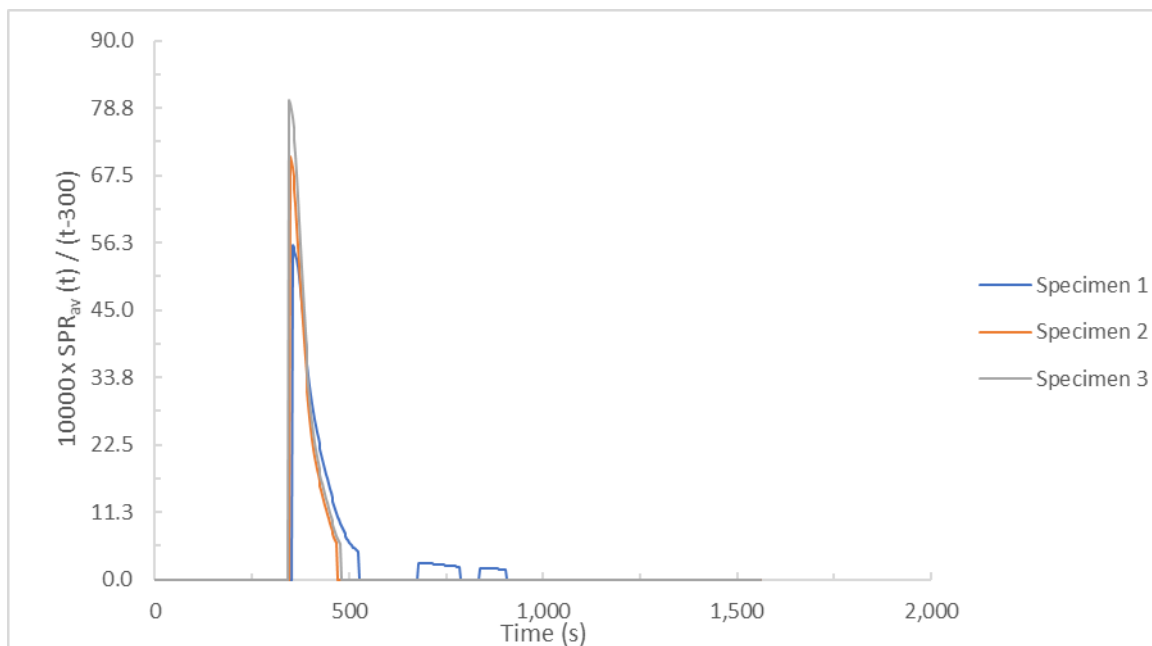


Figure 6 $10000 \times \text{SPR}_{\text{av}}(t) / (t-300)$ vs time

Appendix B Test specimen photographs



Figure 7: Total view of the exposed surface of the long wing prior to testing



Figure 8: Total view of the exposed surface of the long wing after testing



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