warringtonfire
Proud to be part of element

Warringtonfire
Holmesfield Road
Warrington
WA1 2DS

T: +44 (0)1925 655 116
info.warrington@warringtonfire.com
warringtonfire.com

Title:

EXTENDED APPLICATION REPORT IN ACCORDANCE WITH EN 15725 and 15117

Approved Body No:

0833

Product Name:

"HardiePanel"

Report No:

WF 426883

Issue No:

3

Prepared for:

James Hardie Europe GmbH,
Bennigsen-Platz 1,
40474 Dusseldof,
Germany

Date:

24th March 2020

Warringtonfire Testing and Certification Limited
Registered in England and Wales
Registered Office: 10 Lower Grosvenor Place, London, United Kingdom, SW1W 0EN
Company Registration No: 11371436

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1. Introduction

This report extends the field of application of test results obtained for "HardiePanel", a decoratively coated fibre cement board product. Extended application enables the prediction of fire performance, on the basis of one or more test results to the same test standards and enables the classification of product ranges and product families.

2. Details of Product Family

A product family is a group of products, which differ only in aspects that do not influence the properties required in the relevant product standard and, if relevant, end-use parameters, for which the reaction to fire performance remains unchanged (i.e. does not get worse).

The product family for which extended application is to be used is "HardiePanel", a decoratively coated fibre cement board product. The property assessed to determine its influence on the fire performance of the product when tested in accordance with EN 13823 and EN ISO 1716, and classified in accordance with EN 13501-1 was the size of the air gap between the reverse face of the specimen and the mineral wool insulation, with 20mm and 40mm spacings being investigated.

Further to the initial investigation that was conducted, additional testing was performed to establish the effect on the results of a 10mm open vertical joint.

2.1 Product description

The product, "HardiePanel", is fully described below and in the test reports provided in support of classification listed in Clause 3.1.

General description		A decoratively coated, fibre cement board based cladding or board fixed to a wooden frame
Overall thickness of composite		100mm (determined by Warringtonfire)
Overall weight per unit area of composite		19.58kg/m^2 (determined by Warringtonfire)
Product reference		"HardiePanel"
Generic type of cladding		Fibre cement based board
Name of manufacturer		James Hardie® Building Products
Final coating product (face)	Generic type	Water based acrylic topcoat
	Name of manufacturer	Valspar Corporation
	Product reference	"LWR8717"
	Number of coats	Two
	Application rate (total)	130g/m^2
	Application method	High Velocity Hot Air (HVHA)
	Specific gravity	1.18 (wet)
	Flame retardant details	**See Note 1 below**
	Curing process per coat	Curing is achieved via a continuous oven inside the finishing process

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Primer coating product	Generic type	Water based acrylic / epoxy
	Name of manufacturer	Valspar Corporation
	Product reference	"WECO103 / CEC0143"
	Number of coats	One
	Application rate	55g/m^2
	Application method	High Velocity Hot Air (HVHA)
	Specific gravity	**See Note 2 below**
	Flame retardant details	**See Note 1 below**
	Curing process	Curing is achieved via a continuous oven inside the finishing process
Fibre cement board	Product reference	"HardiePanel"
	Generic type	Fibre cement based board
	Detailed description / composition details	Sand, Portland Cement, non-asbestos fibres and additives
	Name of manufacturer	James Hardie Building Products Ltd
	Thickness	8mm
	Density	1300kg/m^3
	Colour	"Grey"
	Flame retardant details	**See Note 1 below**
Wooden frame (as per EN 12467)	Product reference	**See Note 2 below**
	Generic type	
	Name of supplier	
	Thickness	
	Density	
Mineral wool insulation	Product reference	"Rockwool Slab RWA45"
	Generic type	Mineral wool Insulation
	Detailed description / composition details	Stone wool produced from diabase rock
	Name of manufacturer	Rockwool
	Thickness	50mm
	Density	45kg/m^3
	Colour	Yellow
	Flame retardant details	**See Note 2 below**
Mounting and fixing details		A 20mm or 40mm ventilated cavity was situated between the reverse face of the specimens and the mineral wool substrate.
Joint details		Closed vertical joints and open horizontal joints with a width of 10mm were included in the specimens. Additional testing included both vertical and horizontal joints of width 10mm in the specimens.
Brief description of manufacturing process		The board are manufactured by a Hatschek machine, pressed, cured, autoclaved, trimmed and sanded. Finally treated on the surfaces with a water-repellent agent.

Note 1: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Note 2: The sponsor was unable to provide this information.

3. Test reports / classification reports & test results in support of classification

3.1 Test reports / classification reports

Name of Laboratory	Name of sponsor	Test reports/extended application report Nos.	Test method / extended application rules & date
Warringtonfire	James Hardie Europe BV	WF 165031, WF 165032	EN ISO 1716: 2002
Warringtonfire	James Hardie Europe BV	WF 404483	EN ISO 1716: 2010
Warringtonfire	James Hardie Europe GmbH	WF 424170 (formal), WF 424171 (indicative)	EN 13823: 2010 + A1: 2014
Warringtonfire	James Hardie Europe GmbH	WF 503328, WF 503329	EN 13823: 2020
Warringtonfire	James Hardie Europe GmbH	WF 426884 (Issue 3)	EN 13501-1: 2018

3.2 Test results

Test method & test number	Parameter	No. tests	Results	
			Continuous parameter - mean (m)	Compliance parameters
EN ISO 1716	Coating system – PCS (b), comprising: • Topcoat - PCS (b) • Primer - PCS (b)	 3 3	3.9073MJ/m^2 2.7737 MJ/m^2 1.1336 MJ/m^2	 - -
	Core - PCS (a)	3	1.1359 MJ/Kg	-
	For the product as a whole PCS (e)	Summary result	1.4852 MJ/Kg	-
EN 13823	FIGRA $_{0.2MJ}$	Formal – WF 424170	19 W/s	-
		Indicative – WF 424171	11 W/s	
		Indicative – WF 503328	30 W/s	
		Indicative – WF 503329	5 W/s	

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EN 13823 (contd.)	FIGRA $_{0.4MJ}$	Formal – WF 424170	19 W/s	-
		Indicative – WF 424171	11 W/s	
		Indicative – WF 503328	30 W/s	
		Indicative – WF 503329	5 W/s	
	THR $_{600s}$	Formal – WF 424170	1.1 MJ	-
		Indicative – WF 424171	0.6 MJ	
		Indicative – WF 503328	1.6 MJ	
		Indicative – WF 503329	0.5 MJ	
	LFS	Formal – WF 424170	-	Compliant
		Indicative – WF 424171	-	
		Indicative – WF 503328	-	
		Indicative – WF 503329	-	
	SMOGRA	Formal – WF 424170	7 m^2s^2	-
		Indicative – WF 424171	6 m^2s^2	
		Indicative – WF 503328	2 m^2s^2	
		Indicative – WF 503329	2 m^2s^2	
	TSP_{600s}	Formal – WF 424170	7 m^2	-
		Indicative – WF 424171	5 m^2	
		Indicative – WF 503328	11 m^2	
		Indicative – WF 503329	12 m^2	
	Fall of Flaming Droplet/Particle?	Formal – WF 424170	-	Compliant
		Indicative – WF 424171	-	
		Indicative – WF 503328	-	
		Indicative – WF 503329	-	

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EN 13823 (contd.)	Flaming of Fallen Particle Exceeding 10s?	Formal – WF 424170	-	Compliant
		Indicative – WF 424171	-	
		Indicative – WF 503328		
		Indicative – WF 503329	-	

4. Classification and field of application

4.1 Definition of Limits of Extended Application

Initially one formal test and one indicative test were conducted in accordance with EN 13823 and three formal tests were conducted in accordance with EN ISO 1716. The initial assessment of this product family was conducted, and the data generated has been used to determine which variant gave the worst performance.

Initially, indicative EN 13823 testing was conducted on the two different air gaps 40mm and 20mm spacing as follows:

- 20mm cavity, with a closed vertical joint, and open (10mm) horizontal joint – WF 424170
- 40mm cavity, with a closed vertical joint, and open (10mm) horizontal joint – WF 424171

The specification with the worst set of results was tested formally in accordance with EN 13823. Formal ISO 1716 tests were conducted on each individual layer of the composite.

Subsequent to the initial investigation, additional indicative tests were conducted with open (10mm) horizontal joints as follows

- 40mm cavity, with open (10mm) vertical and horizontal joints – WF 503328
- 20mm cavity, with open (10mm) vertical and horizontal joints – WF 503329

To ensure that the presence of horizontal and vertical open joints did not have a detrimental effect on the results obtained.

4.2 EN ISO 1716

The data generated from the three formal ISO 1716 tests, and the calculations for the composite product demonstrated that the product achieved the PCS (a), PCS (b) and PCS (e) criteria of classification A2 (EN 13501-1).

4.3 EN 13823

The SBI test measures the following fire parameters, Fire Growth Rate (FIGRA), Total Heat Release (THR_{600s}), Smoke Growth Rate (SMOGRA) and Total Smoke Production (TSP_{600s}).

These parameters were evaluated to assess what influence the air gap size has on the fire performance of "HardiePanel", a decoratively coated fibre cement board based cladding. This evidence is shown in Figures 1 and 2.

The highest FIGRA value was approximately 75% below the maximum value allowed for Class A2, (EN 13501-1). The highest THR600s value was approximately 78% below the maximum value allowed for Class A2, (EN 13501-1).

The measured results relating to smoke parameters, SMOGRA and TSP600s, also fall within the s1 criteria, with the highest smoke value being approximately 76% below the maximum allowed for s1, (EN 13501-1).

In no instance were flaming droplets/particles in evidence during the fire tests.

4.4 Reference of classification

This classification has been carried out in accordance with EN 13501-1:2018, EN 12467: 2012 + A2: 2018, EN 15725: 2010 and EN/TS 15117: 2005.

4.5 Classification

The product, "HardiePanel", a decoratively coated fibre cement board based cladding, in relation to its reaction to fire behaviour is classified:

A2

The additional classification in relation to smoke production is:

s1

The additional classification in relation to flaming droplets / particles is:

d0

The format of the reaction to fire classification for construction applications, excluding flooring and linear pipe thermal insulation is:

Fire Behaviour		Smoke Production			Flaming Droplets	
A2	-	s	1	,	d	0

i.e. A2 – s1 , d0

Reaction to fire classification: A2 – s1, d0

4.6 Extended Field of application

This classification is valid for the following end use applications:

i) Construction applications used with or without thermal insulation over any substrate having a fire performance of A2-s1, d0 or better (excluding paper faced gypsum plasterboard), as long as a ventilated air gap of at least 20mm is present directly behind the fibre cement sheet.

This classification is also valid for the following product parameters:

Panel thickness	8mm (as tested) or greater allowed
Surface texture	Smooth or embossed allowed
Product density	1300kg/m^3 ± 0.15g/cm^3
Product colour/pattern	No variation allowed
Air space	20mm or greater allowed
Joints	Vertical and horizontal allowed
Joint width	Up to 10mm
Fixing	Mechanical fixings eg metal (not aluminium) nails or rivets allowed
Fixing centres	Any spacing allowed
Supporting profile	Timber or metal profile allowed
Product composition	No further variation allowed
Product construction	No further variation allowed

5. Limitations

This document does not represent type approval or certification of the product

SIGNED

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Certification Engineer
Technical Department

APPROVED

..

Technical Manager
Technical Department
On behalf of **warringtonfire**

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Issue 2: Addition of joint size on request of client. 26th March 2020, 

Issue No : 3	Re-issue Date: 22nd June 2021
Revised By: 	Authorised By: 
Reason for Revision: This document replaces Issue 2 (dated 26th March 2021) of the same number which has been withdrawn. Additional SBI testing has been conducted and these results have been incorporated into the relevant sections of this report, with the field of application section being updated to reflect the additional evidence generated.	

Figure 1 - Effect of varying the product specification on FIGRA and TSP600s

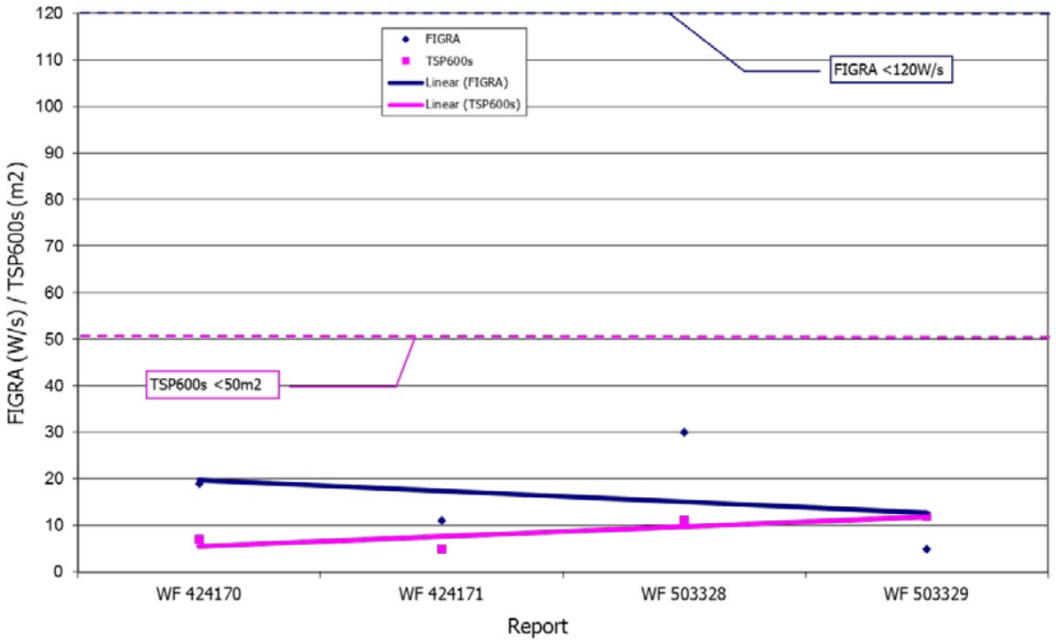
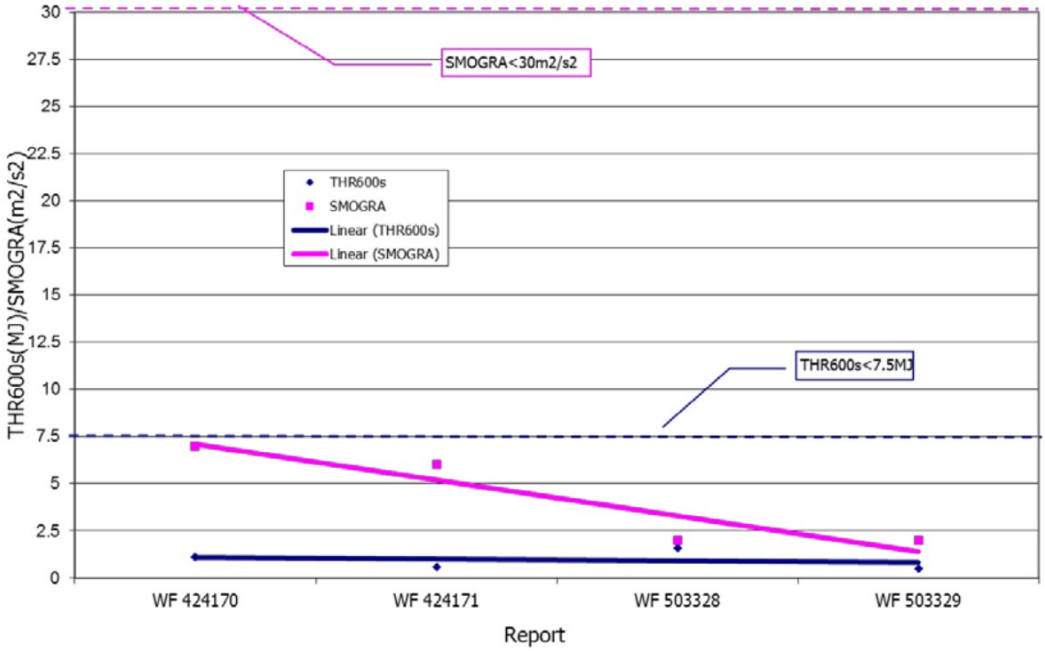


Figure 2 - Effect of varying the product specification on THR600s and SMOGRA



Toelichting grondslagen

In dit document kunt u secties vinden die onleesbaar zijn gemaakt. Deze informatie is achterwege gelaten op basis van de Wet open overheid (Woo). De letter die hierbij is vermeld correspondeert met de bijbehorende grondslag in onderstaand overzicht.

J Art. 5.1 lid 2 sub e

Het belang van de openbaarmaking van deze informatie weegt niet op tegen het belang van de eerbiediging van de persoonlijke levenssfeer van betrokkenen