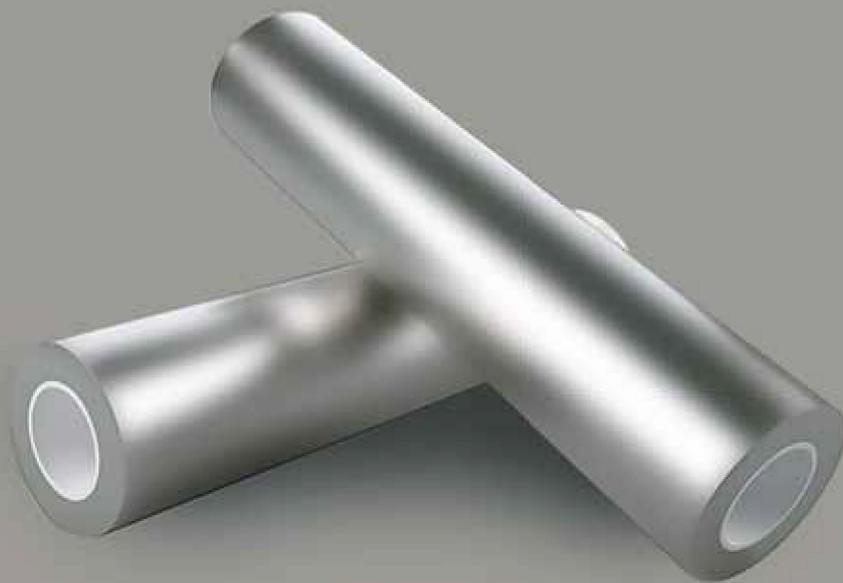




Challenging the Elements



Vapor Fas 62-05



For over 50 years, Temati have been manufacturing, promoting and selling Fosters[®] products in the Benelux region. Temati is now Europe's sole licensed manufacturer and supplier of Fosters and Childers products.

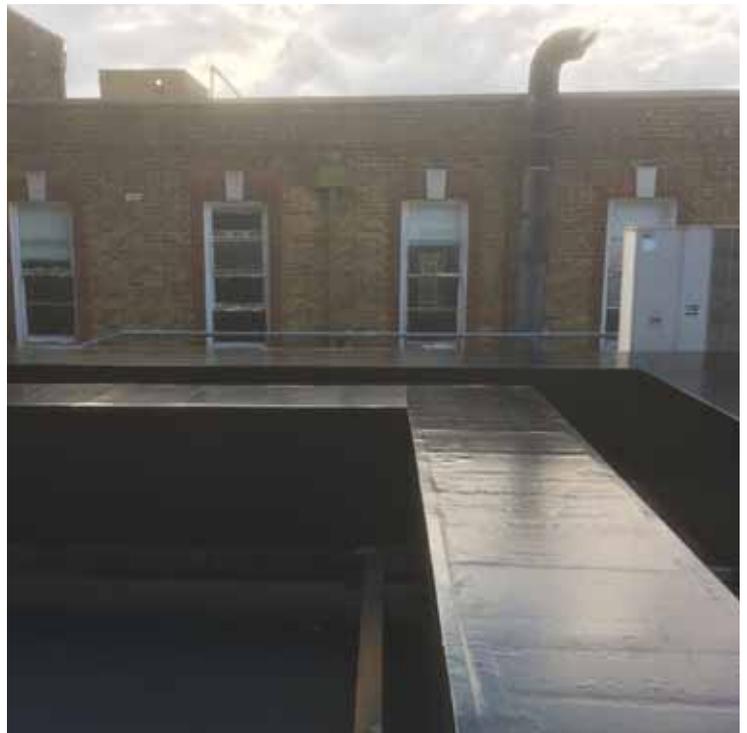
As we continue to expand our product offering, you can continue to rely on Temati for a wide range of products, including, insulation materials, technical fabrics and all associated ancillaries. They are designed to be used in the most demanding and extreme of environments.

Vapor Barrier Jacketing

Vapor Fas 62-05 is a flexible vapour barrier jacketing material designed for use over insulation, on commercial ductwork, piping and equipment. It is comprised of a -5ply aluminium and polymer laminated film with an aggressive pressure sensitive adhesive and release liner. The special multi-ply laminate film contains an outer protective coat that improves resistance to UV and environmental contaminants. It has extremely low permeability and has excellent resistance to puncture and tearing. It provides protection to the insulation from weather, moisture ingress and physical abuse.

Vapor Fas 62-05 can be used over most types of thermal insulation including cellular glass, polyurethane, polyisocyanurate, polystyrene and rigid fibrous insulation. It resists mould and mildew growth on its surface and has excellent weathering properties making it ideal for both indoor and outdoor applications.

Vapor Fas 62-05 provides a fast, labour saving application. It can be easily applied in the field or in the workshop with no special tools required. It can be used for both new systems as well as repairs on existing structures.



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COMPANY PROFILE

Temati was founded in 1962 to manufacture, promote and sell Foster® Products in the Benelux, as well as in a number of non-allocated international countries.

Over the years Temati has gradually increased its production-capacity to include most of the Foster® 'Thermal' and 'Asbestos Abatement' products, whilst the area of operation expanded to include Germany, Scandinavia and all major East-European countries.

From the start of its operation Temati has supplemented its range with accessory and insulation products, such as technical fabrics, portable 2-component PU-foam units, needled insulating blankets, protective foils and tapes, corrosion prevention products, etc..

Furthermore Temati has become a strong player on the international scene, particularly with regard to (petro) chemical and shipbuilding projects. Since December 2003, Temati has become sole European licensee manufacturer/supplier for Foster® and Childers products.

Today, we supply a growing range of specialist materials to an increasing number of customers throughout Europe and beyond from Temati's head-office in The Netherlands and company-owned branches in Germany, the United Kingdom, France, Czech Republic, the United Arab Emirates and Canada.

Our products are either supplied by Temati itself or by distributors or agents located around the world.





62-05 Vapor Fas

Properties

COLOURS: Silver, White, Black & Embossed (Silver Only)

COMPOSITION: 5 ply Aluminum / Polymer laminate with pressure sensitive adhesive and release liner.

SERVICE TEMPERATURE:
(Temperature at jacketing surface)
-40° F to 250° F (-40° C to 121° C)

STANDARD ROLL SIZE
0.5m x 50m

TOTAL FILM THICKNESS:
90µ (0.09mm) Excludes Adhesive and Release Liner
120µ (0.12mm) Includes Adhesive and Release Liner

WATER VAPOUR TRANSMISSION (ASTM E 96):
0.00 perms -tests carried out at 23±2°C, 50±5% RH

PUNCTURE RESISTANCE (ASTM D-1000):
52 lbs – 230 newtons (mean)

TEAR STRENGTH (ASTM D 624):
22lbs – 101 newtons/mm (mean) Type C

FIRE TESTING:
Tested to BS476 Parts 6 & 7
Class “0” achieved
NF P92-501 Reaction to Fire – M1 Classified

Surface Burning Characteristics of Building ASTM E-84

Flame Spread Index – 0
Smoke Developed Index – 10
Class A

**UL 723 (ASTM E 84) Surface Burning
Characteristics** Flame Spread Index – 0
Smoke Developed Index – 15
Class A

Vapor Barrier Jacketing

Vapor Fas 62-05 is a flexible vapour barrier jacketing material designed for use over insulation, on commercial ductwork, piping and equipment. It is comprised of a 5-ply aluminum and polymer laminated film with an aggressive pressure sensitive adhesive and release liner. The special multi-ply laminate film contains an outer protective coat that improves resistance to UV and environmental contaminants. It has extremely low permeability and has excellent resistance to puncture and tearing. It provides protection to the insulation from weather, moisture ingress and physical abuse.

Vapor Fas 62-05 can be used over most types of thermal insulation including cellular glass, polyurethane, polyisocyanurate, polystyrene and rigid fibrous insulations. It resists mold and mildew growth on its surface and has excellent weathering properties making it ideal for both indoor and outdoor applications.

Vapor Fas 62-05 provides a fast, labour saving application. It can be easily applied in the field or in the shop with no special tools required. It can be used for both new systems as well as repairs on existing structures.

LIMITATIONS

Store between 5°C and 32°C

Apply below 125°F (52°C).

Do not apply to damp, frosty or contaminated surfaces.

Not for use below grade in direct contact with the earth.

Vapor Barrier Jacketing is not to be used for banding or mechanical fastening. Standard fastening of insulation is required.

HVAC ductwork must be sealed and tested for air leakage prior to applying insulation and Vapor-Fas jacketing.

For application by skilled professionals only.

MATERIAL SAFETY DATA SHEET

SECTION 1: Identification of the substance or mixture and of the company/ undertaking

1.1 Product identification

Trade name: Vapor-Fas 62-05

1.2 Relevant identified uses of the substance or mixture and uses advised against

No further relevant information available.

Application of the substance / the mixture 5-ply Vapour Barrier Laminate

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Temati

Rijnland 2

NL-1948 RL Beverwijk

The Netherlands

Tel: +31 251 229 172

Fax: +31 251 212 380

Email: temati@temati.com

Further information obtainable from: Product safety Department

1.4 Emergency telephone number: Tel: +31 251 229 172 (mo-fr/9-17)

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Classification according to Directive 67/548/EEC or Directive 1999/45/EC Not applicable.

Information concerning particular hazards for human and environment:

The product does not have to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

2.2 Label elements

Labelling according to EU guidelines:

Observe the general safety regulations.

The product is not subject to identification regulations under EU Directives and the Ordinance on Hazardous Materials (German GefStoffV).

Special labelling of certain preparations:

Safety data sheet available for professional user on request.

2.3 Other hazards

Results of PBT and vPvB assessment

- PBT: Not applicable.
- vPvB: Not applicable.

SECTION 3: Composition/ information on ingredients

The above listed product may contain one or more hazardous chemical components. However, due to their incorporation into the structure of the product, exposure to such components is not anticipated under normal conditions of use (see section 16 for further information).

SECTION 4: First aid measures

Clean and dress wound if cut by the edge of the product. There are no known acute, immediate or prolonged effects as a result of exposure to this product as supplied.

SECTION 5: Firefighting measures

All extinguishing chemicals and methods may be used. Self-contained, positive pressure breathing apparatus should be used if available. Fire or extremely high temperatures (higher than conditions recommended for normal use) may cause the release of toxic smoke or fumes from the material.

SECTION 6: Accidental release measures

Not applicable.

SECTION 7: Handling and storage

Use care to avoid cuts from the edges of the material. No other special handling or storage precautions apply.

SECTION 8: Exposure controls/ personal protection

None required under normal conditions of use. Exercise care or wear gloves in order to avoid cuts from the edges of the material.

SECTION 9: Physical and chemical Properties

This product is a manufactured article in the form of a flexible sheet, strip or roll. It contains a combination of two or more of the following major components : paper, plastic film, aluminium foil, adhesive.

SECTION 10: Stability and reactivity

Hazardous decomposition will occur only if disposed of in fire. Various harmful compounds could be formed during combustion. There are no hazards associated with the product under normal conditions of use.

SECTION 11: Toxicological information

Although hazardous chemicals may be used during the manufacture of this product, exposure to these chemicals and any possible effects will not occur if the product is used in its current form and within the normal conditions of use.

SECTION 12: Ecological information

The anticipated instances of release into the environment would be during the disposal of scrapped building materials, of which this product could be a part, or waste during use. Other than the paper component, the materials of which this material is constructed are extremely resistant to biodegradation and are not water soluble.

SECTION 13: Disposal considerations

Dispose of this product as per appropriate local regulations. This product is not recyclable.

SECTION 14: Transport information

No special procedures required.

SECTION 15: Regulatory information

No known regulations apply.

SECTION 16: Other information

As per the code of Federal Regulations 1910.1200, this product is considered by Temati B.V. to be an article, defined in the regulation as "a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) has end use function(s) dependent in the whole or in part upon its shape or design during end use; and (iii) which does not release more than very small quantities (e.g. minute or trace amounts) of hazardous chemicals, and does not pose a physical hazard or health risk to employees".

Although this product may contain hazardous components, we do not believe those hazards are present after manufactured or during use. Since the product meets the definition of an article, it is not subject to this regulation or MSDS reporting. This document is provided for information purposes only and is not meant to imply that the product is hazardous



Vapor-Fas 62-05 Vapor Barrier Jacketing

Laminated foil/film facing for interior and exterior applications

Installation Instructions

Surface Preparation

Ensure that all surfaces are dry and clean, free from dust, oil and grease/silicone. All insulation should be taped securely, giving an even surface for the Vapor-Fas application. All adhesives work best when firmly “wetted out” to the substrate surfaces.

When applying, partly peel back and crease the liner so enough adhesive is available to attach the Vapor-Fas in the correct position. Then, with the spreader, progressively remove the liner while smoothing, until the entire sheet has been applied.

When applying Vapor-Fas sheet onto a continuous surface until it meets itself, a 3 inch (75mm) overlap is recommended to give a strong, weatherproof seal. Plan the wrap so that the edge of the sealing flap faces down.



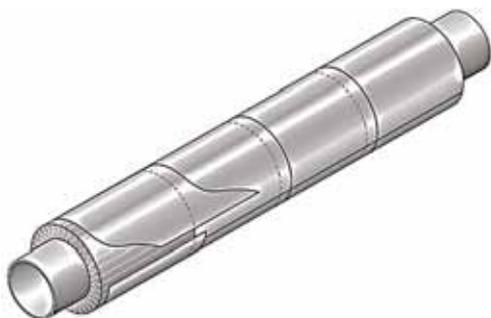
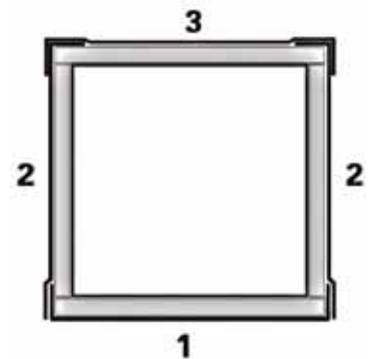
Application to Rectangular Ductwork

On ductwork over 32 inches (80cm) wide, it is recommended that the top be crowned (pitched), to allow water runoff, preventing pooling.

For fast, easy application, Vapor-Fas should be applied to each of the sides separately, starting with the bottom surface, then the sides and finally the top.

Pre-cut Vapor-Fas to the required size, plus an additional overlap of 3 inches (75mm) for each adjoining surface.

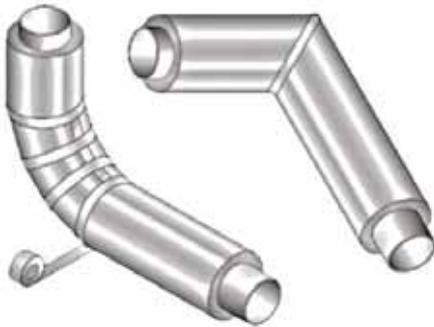
When applying to rectangular ductwork, apply to the bottom surface first, bringing the 3 inch (75mm) overlap up, onto the sides. Next apply Vapor-Fas to the vertical surface, bringing the 3 inch (75mm) overlap over onto the top surface. Finally apply Vapor-Fas to the top of the duct, bringing a 3 inch (75mm) overlap down onto each side of the vertical surface.



Application to Pipe/Circular Section Ductwork

On straight pipe, cut Vapor-Fas to the desired length (pipe circumference), plus an additional overlap of 3 inches (75mm).

Apply the next piece allowing a 3 inch (75mm) overlap onto the previous section.



On bends and elbow configurations, pre-cover the pipe insulation with Vapor-Fas. Cut out the required shapes to cover the segments of the bends and elbows and apply.

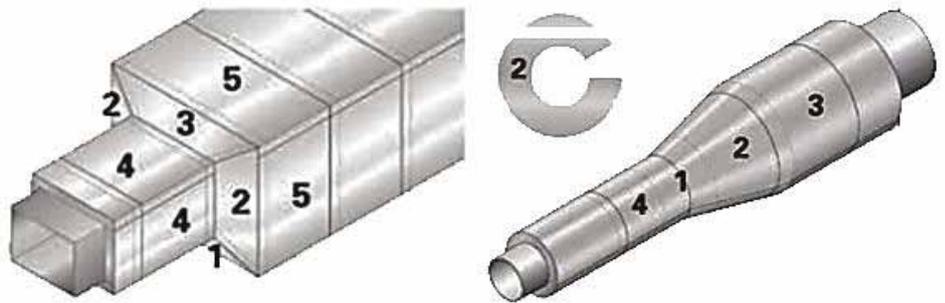
Application to Ductwork Reducer
Starting from the bottom, work upwards allowing an overlap of 3 inches (75mm) onto adjacent surfaces.

First apply Vapor-Fas to surface No. 1, and overlap onto each adjoining surface.

Apply Vapor-Fas to surface No. 2, and overlap onto surfaces No. 3, 4 and 5, sealing onto the overlap and trimming flush at surface No. 1, to achieve a near, secure finish.

Apply Vapor-Fas to surface No. 3 in the same manner as to surface No. 2, but seal onto the overlap and trim at surface No. 2.

Finally, apply Vapor-Fas to surface No. 4 and 5 as with other rectangular ductwork.

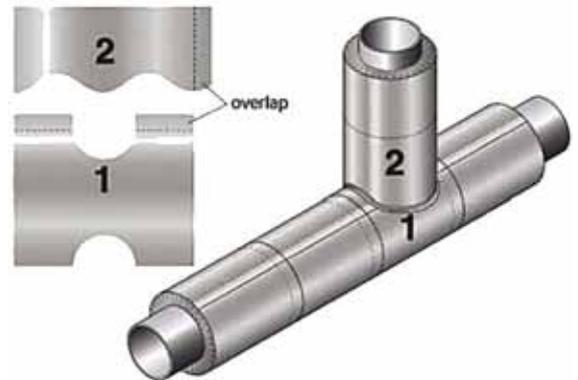


On "tee" sections, make appropriately configured templates of Vapor-Fas, leaving a 1 inch (25mm) overlap.

On reduced pipe, apply Vapor-Fas first to surface No. 1 overlapping onto surface No. 2. Cut shape No. 2 allowing for 3 inches (75mm) overlap, and apply to surface No. 2, overlapping onto section No. 1.

Apply Vapor-Fas to surface No. 3 overlapping and sealing onto section No. 2.

Finally, apply to surface No. 4 overlapping and sealing onto section No. 1.



Repair of Vapor-Fas

Should damage occur, simply ensure that the surface is clean, and apply a new section of Vapor-Fas over the damaged area, to a minimum of 3 inches (75mm) past the damage site.



**Bluewater Island
Hotel Project
Dubai-U.A.E**

**Doha Metro
Qatar**



**Warwick University
UK**



**Southend Hospital
UK**

**Amazon
Distribution Centre
Swansea-UK**



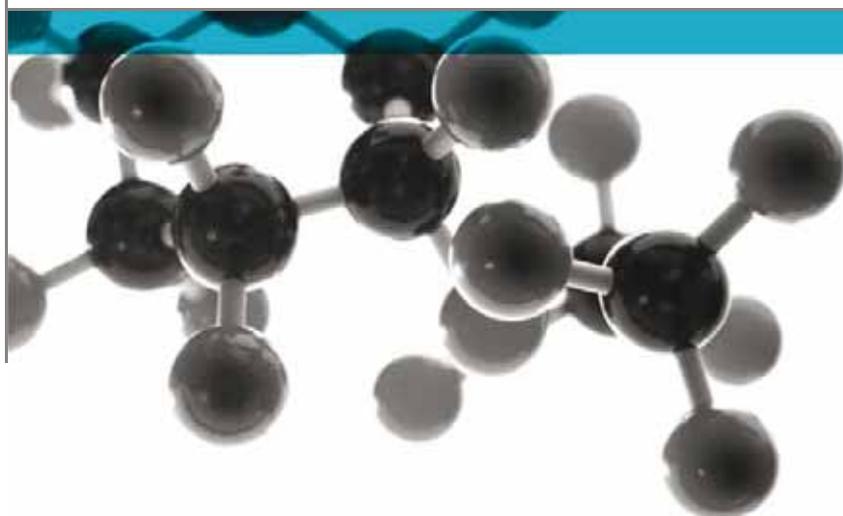
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BS 476: Part 6: 1989+A1:2009



Method Of Test For Fire Propagation For Products

A Report To: Temati

Document Reference: 344193

Date: 16th September 2014

Issue No.: 1

Page 1

Testing
Advising
Assuring

Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No.SC 70429
This report is issued in accordance with our terms and conditions, a copy of which is available on request.



Executive Summary

Objective To determine the performance of the following product when tested in accordance with BS 476: Part 6: 1989+A1: 2009.

Generic Description	Product reference	Thickness	Weight per unit area or density
Flame retardant grade self-adhesive 5 ply aluminium laminate adhered to an 'air gap' calcium silicate substrate	"Foster 62-05 Vapor Fas"	12.62mm *	17.87kg/m ² *
Individual components used to manufacture composite:			
Self-adhesive aluminium laminate	"Foster 62-05 Vapor Fas"	0.108mm	197.5g/m ²
Adhesive	"PSA"	8-10 microns	Not stated
Substrate	"Promat Brandschutzbauplatten; Promatect-H"	– 12.5mm thick strips around the edges to form airgap	870kg/m ³
*Determined by Exova Warringtonfire			
Please see pages 5, 6 & 7 of this test report for the full description of the product tested			

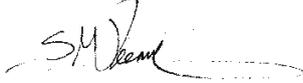
Test Sponsor Temati, Unit 3a Isabella Court, Millennium Business Park, Mansfield, NG19 7JZ.

Test Results:

Fire propagation index, I	=	4.7
Sub index, i₁	=	3.8
Sub index, i₂	=	0.9
Sub index, i₃	=	0.0

Date of Test 9th September 2014

Signatories

	
Responsible Officer C. Meachin * Technical Officer	Authorised S. Deeming * Operations Manager

* For and on behalf of **Exova Warringtonfire**.

Report Issued: 16th September 2014

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Document No.: 344193

Page No.: 2 of 12

Author: C. Meachin

Issue Date: 16th September 2014

Client: Temati

Issue No.: 1



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DESCRIPTION OF TEST SPECIMENS.....	5
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Table 3.....	10
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Test Details

Purpose of test	<p>To determine the performance of a product when it is subjected to the conditions of the test specified in BS 476: Part 6: 1989+A1: 2009, "Fire tests on building materials and structures, method for fire propagation for products".</p> <p>The test was performed in accordance with the procedure specified in BS 476: Part 6: 1989+A1: 2009, and this report should be read in conjunction with that British Standard.</p>
Scope of test	<p>BS 476: Part 6: 1989+A1: 2009 specifies a method of test, the result being expressed as a fire propagation index, that provides a comparative measure of the contribution to the growth of fire made by an essentially flat material, composite or assembly. It is primarily intended for the assessment of the performance of internal wall and ceiling linings.</p>
Fire test study group/EGOLF	<p>Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.</p>
Instruction to test	<p>The test was conducted on the 9th September 2014 at the request of Temati, the sponsor of the test.</p>
Provision of test specimens	<p>The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure. Exova Warringtonfire supplied the calcium silicate air gap substrate.</p>
Conditioning of specimens	<p>The specimens for testing to BS 476: Part 6: 1989+A1: 2009 together with the specimens for testing to BS 476: Part 7: 1997 were received on the 26th August 2014.</p> <p>Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$. One specimen from the total sample submitted for test was selected for constant mass verification.</p>
Form in which the specimens were tested	<p>Composite - Combination of materials which are generally recognised in building constructions as discrete entities e.g. coated or laminated materials.</p>
Exposed face	<p>The aluminium face of the specimens was exposed to the heating conditions of the test.</p>

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Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Flame retardant grade self-adhesive 5 ply aluminium laminate adhered to an air gap calcium silicate substrate		
Product reference		"Foster 62-05 Vapor Fas"		
Name of manufacturer		See Note 1 Below		
Overall thickness		12.62mm (determined by Exova Warringtonfire)		
Overall weight per unit area		17.87kg/m ² (determined by Exova Warringtonfire)		
Thickness of laminate		0.108mm (stated by sponsor) 0.11mm (determined by Exova Warringtonfire)		
Weight per unit area of laminate		197.5 g/m ² (stated by sponsor) 202.45 g/m ² (determined by Exova Warringtonfire)		
Self-adhesive aluminium laminate	1 st ply	Aluminium	Generic type	Aluminium
			Product reference	"A25 – ALUFOIL"
			Name of manufacturer	See Note 1 Below
			Thickness	25 microns
			Specific gravity	2.7
			Weight per unit area	67.5g/m ²
			Colour reference	"Silver"
			Flame retardant details	See Note 2 Below
	Polymer	Generic type	Polyurethane	
		Product reference	"Polyurethane 2-Part"	
		Name of manufacturer	See Note 1 Below	
		Thickness	2 microns	
		Weight per unit area	2.4g/m ²	
		Colour reference	"Clear"	
		Flame retardant details	See Note 1 Below	
		Polyester	Generic type	Polyester
	Product reference		"PET23"	
	Name of manufacturer		See Note 1 Below	
	Thickness		23 microns	
	Specific gravity		1.4	
	Weight per unit area		32.2g/m ²	
	Colour reference		"Clear"	
	Flame retardant details		See Note 1 Below	
	Polymer	Generic type	Polyurethane	
Product reference		"Polyurethane 2-Part"		
Name of manufacturer		See Note 1 Below		
Thickness		2 microns		
Weight per unit area		2.4g/m ²		
Colour reference		"Clear"		
Flame retardant details		See Note 1 Below		
2 nd ply		Polyester	Generic type	Polyester
	Product reference		"PET23"	
	Name of manufacturer		See Note 1 Below	
	Thickness		23 microns	
	Specific gravity		1.4	
	Weight per unit area		32.2g/m ²	
	Colour reference		"Clear"	
	Flame retardant details		See Note 1 Below	
Polymer	Generic type	Polyurethane		
	Product reference	"Polyurethane 2-Part"		
	Name of manufacturer	See Note 1 Below		
	Thickness	2 microns		
	Weight per unit area	2.4g/m ²		
	Colour reference	"Clear"		
	Flame retardant details	See Note 1 Below		

Continued on next page

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Client: Temati

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Self-adhesive aluminium laminate continued	3 rd ply	Aluminium	Generic type	Aluminium
			Product reference	"A9 – ALUFOIL"
			Name of manufacturer	See Note 1 Below
			Thickness	9 microns
			Specific gravity	2.7
			Weight per unit area	24.3g/m ²
			Colour reference	"Silver"
			Flame retardant details	See Note 2 Below
	4 th ply	Polymer	Generic type	Polyurethane
			Product reference	"Polyurethane 2-Part"
			Name of manufacturer	See Note 1 Below
			Thickness	2micron
			Weight per unit area	2.4g/m ²
			Colour reference	"Clear"
			Flame retardant details	See Note 1 Below
	5 th ply	Polyester	Generic type	Polyester
			Product reference	"PET12"
			Name of manufacturer	See Note 1 Below
			Thickness	23 microns
		Polymer	Generic type	Polyurethane
			Product reference	"Polyurethane 2-Part"
			Name of manufacturer	See Note 1 Below
			Thickness	2 microns
	Adhesive	Polyester	Weight per unit area	2.4g/m ²
			Colour reference	"Clear"
			Flame retardant details	See Note 1 Below
			Generic type	Polyester
			Product reference	"PET12"
Name of manufacturer			See Note 1 Below	
Thickness			12 microns	
Specific gravity			1.4	
Weight per unit area	16.8g/m ²			
Colour reference	"Clear"			
Flame retardant details	See Note 1 Below			
Adhesive	Acrylic	Generic type	Acrylic	
		Product reference	"PSA"	
		Name of manufacturer	See Note 1 Below	
		Colour reference	"Clear / Yellowed"	
		Application thickness	8-10 microns	
		Application method	Gravure cylinder	
		Flame retardant details	See Note 1 Below	
		Curing process	See Note 1 Below	

Continued on next page

Substrate	Product reference	"Promat – Brandschutzbauplatten; Promatect-H"
	Generic type	12.5mm thick calcium silicate based board strips around the edges to form an airgap behind the reverse face of the specimen
	Name of manufacturer	Promat
	Thickness	12.5mm
	Density	870kg/m ³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		See Note 1 Below

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

Note 2: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Test Results

Results

A total of three specimens were tested. The laboratory record sheet relating to each of the test specimens is appended to this report (refer to Tables 1, 2 and 3).

Throughout the test on each specimen careful observation was made of the product's behaviour within the apparatus and special note was taken of any of the phenomena listed in clause 9.2 of the Standard. None of the listed phenomena was observed and the test results on all three specimens tested were valid.

The following test results were obtained for the product.

Fire propagation index, I	=	4.7
Sub index, i_1	=	3.8
Sub index, i_2	=	0.9
Sub index, i_3	=	0.0

NOTE: If a suffix 'R' is included in the above fire propagation index, I, then this indicates that the results should be treated with caution.

Applicability of test result

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

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

Validity

The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

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Author: C. Meachin

Issue Date: 16th September 2014

Client: Temati

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Table 1

Laboratory Record Sheet
FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 1

Date : 9-Sep-14

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	19	12	1.40	
1.00	27	18	0.90	
1.50	33	24	0.60	
2.00	38	28	0.50	
2.50	41	32	0.36	
3.00	46	37	0.30	4.06
4.00	78	70	0.20	
5.00	116	104	0.24	
6.00	139	134	0.08	
7.00	164	157	0.10	
8.00	179	173	0.08	
9.00	194	186	0.09	
10.00	202	196	0.06	0.85
12.00	213	214	0.00	
14.00	221	226	0.00	
16.00	232	235	0.00	
18.00	239	243	0.00	
20.00	245	248	0.00	0.00
Total Index of Performance S			=	4.91

SubIndex s1 4.06

SubIndex s2 0.85

SubIndex s3 0.00

Index of Performance S 4.91

Table 2

Laboratory Record Sheet
FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 2

Date : 9-Sep-14

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	17	12	1.00	
1.00	27	18	0.90	
1.50	32	24	0.53	
2.00	37	28	0.45	
2.50	41	32	0.36	
3.00	46	37	0.30	3.54
4.00	81	70	0.28	
5.00	115	104	0.22	
6.00	141	134	0.12	
7.00	163	157	0.09	
8.00	179	173	0.08	
9.00	194	186	0.09	
10.00	203	196	0.07	0.93
12.00	219	214	0.04	
14.00	231	226	0.04	
16.00	239	235	0.03	
18.00	244	243	0.01	
20.00	251	248	0.02	0.12
Total Index of Performance S			=	4.60

SubIndex s1 3.54

SubIndex s2 0.93

SubIndex s3 0.12

Index of Performance S 4.60

Table 3

Laboratory Record Sheet
FIRE PROPAGATION TEST - BS476:PART 6:1989+A1:2009

Specimen No. : 3

Date : 9-Sep-14

Time mins t	Specimen Temperature Deg C Ts	Calibration Temperature Deg C Tc	Ts- Tc/10t	Sub Index Of Performance
0.50	17	12	1.00	
1.00	27	18	0.90	
1.50	32	24	0.53	
2.00	38	28	0.50	
2.50	42	32	0.40	
3.00	47	37	0.33	3.67
4.00	80	70	0.25	
5.00	116	104	0.24	
6.00	140	134	0.10	
7.00	161	157	0.06	
8.00	176	173	0.04	
9.00	194	186	0.09	
10.00	204	196	0.08	0.85
12.00	216	214	0.02	
14.00	226	226	0.00	
16.00	234	235	0.00	
18.00	243	243	0.00	
20.00	250	248	0.01	0.03
Total Index of Performance S			=	4.55

SubIndex s1 3.67

SubIndex s2 0.85

SubIndex s3 0.03

Index of Performance S 4.55

Revision History

Issue No :	Re-issue Date:
Revised By:	Approved By:
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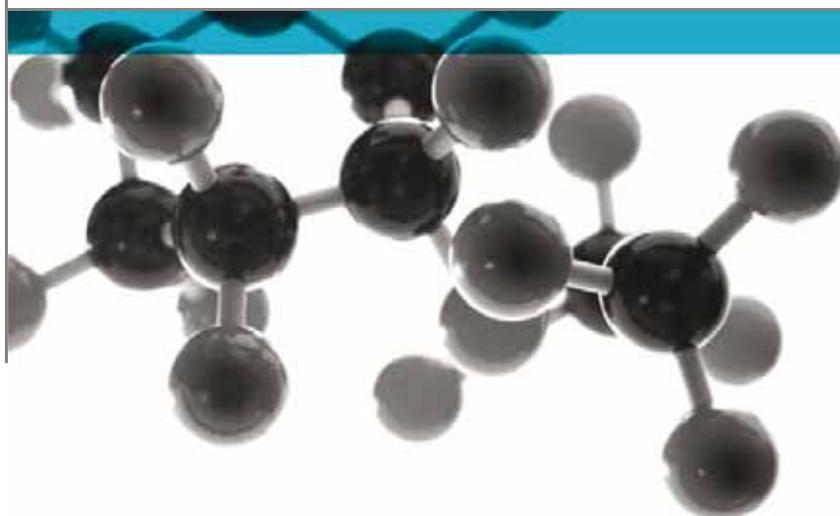
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BS 476: Part 7: 1997



Method For Classification Of The Surface Spread Of Flame Of Products

A Report To: Temati

Document Reference: 344194

Date: 16th September 2014

Issue No.: 1

Page 1

Testing
Advising
Assuring

Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No.SC 70429
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Executive Summary

Objective To determine the surface spread of flame classification of the following product when tested in accordance with BS 476: Part 7: 1997.

Generic Description	Product reference	Thickness	Weight per unit area or density
Flame retardant grade self-adhesive 5 ply aluminium laminate adhered to an 'air gap' calcium silicate substrate	"Foster 62-05 Vapor Fas"	36.6mm *	17.87kg/m ² *
Individual components used to manufacture composite:			
Self-adhesive aluminium laminate	"Foster 62-05 Vapor Fas"	0.108mm	197.5g/m ²
Adhesive	"PSA"	8-10 microns	Not stated
Substrate	"Promat Brandschutzbauplatten; Promatect-H"	12.5mm with 2 x 12.5mm thick strips around the edges to form 25mm airgap	870kg/m ³
*Determined by Exova Warringtonfire			
Please see pages 5, 6 & 7 of this test report for the full description of the product tested			

Test Sponsor Temati, Unit 3a Isabella Court, Millennium Business Park, Mansfield, NG19 7JZ.

Test Results: **Class 1**

Date of Test 9th September 2014

Signatories

	
Responsible Officer C. Meachin * Technical Officer	Authorised S. Deeming * Operations Manager

* For and on behalf of **Exova Warringtonfire**.

Report Issued: 16th September 2014

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Document No.: 344194

Page No.: 2 of 11

Author: C. Meachin

Issue Date: 16th September 2014

Client: Temati

Issue No.: 1



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Test Details

Purpose of test	To determine the performance of a product when it is subjected to the conditions of the test specified in BS 476: Part 7: 1997, "Fire tests on building materials and structures, method for classification of the surface spread of flame of products". This test was therefore performed in accordance with the procedure specified in BS 476: Part 7: 1997 and this report should be read in conjunction with that British Standard.
Scope of test	BS 476: Part 7: 1997 specifies a method of test for measuring the lateral spread of flame along the surface of a specimen of a product orientated in the vertical position, and a classification system based on the rate and extent of flame spread. It provides data suitable for comparing the performances of essentially flat materials, composites, or assemblies, which are used primarily as the exposed surfaces of walls or ceilings.
Fire test study group/EGOLF	Certain aspects of some fire test specifications are open to different interpretations. The Fire Test Study Group and EGOLF have identified a number of such areas and have agreed Resolutions which define common agreement of interpretations between fire test laboratories which are members of the Groups. Where such Resolutions are applicable to this test they have been followed.
Instruction to test	The test was conducted on the 9 th September 2014 at the request of Temati, the sponsor of the test.
Provision of test specimens	The specimens were supplied by the sponsor of the test. Exova Warringtonfire was not involved in any selection or sampling procedure.
Conditioning of specimens	<p>The specimens for testing to BS 476: Part 6: 1989+A1: 2009 together with the specimens for testing to BS 476: Part 7: 1997 were received on the 26th August 2014.</p> <p>Prior to the tests, all of the specimens were conditioned to constant mass at a temperature of $23 \pm 2^{\circ}\text{C}$ and a relative humidity of $50 \pm 5\%$. One specimen from the total sample submitted for test was selected for constant mass verification.</p>
Form in which the specimens were tested	Composite - Combination of materials which are generally recognised in building constructions as discrete entities e.g. coated or laminated materials. Each specimen was tested in direct contact with a nominally 12mm thick non-combustible backing board.
Exposed face	The aluminium face of the specimens was exposed to the heating conditions of the test.

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Author: C. Meachin

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Client: Temati

Issue No.: 1



Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Flame retardant grade self-adhesive 5 ply aluminium laminate adhered to an 'air gap' calcium silicate substrate		
Product reference		"Foster 62-05 Vapor Fas"		
Name of manufacturer		See Note 1 Below		
Overall thickness		36.6mm (determined by Exova Warringtonfire)		
Overall weight per unit area		17.87kg/m ² (determined by Exova Warringtonfire)		
Thickness of laminate		0.108mm (stated by sponsor) 0.11mm (determined by Exova Warringtonfire)		
Weight per unit area of laminate		197.5 g/m ² (stated by sponsor) 202.45 g/m ² (determined by Exova Warringtonfire)		
Self-adhesive aluminium laminate	1 st ply	Aluminium	Generic type	Aluminium
			Product reference	"A25 – ALUFOIL"
			Name of manufacturer	See Note 1 Below
			Thickness	25 microns
			Specific gravity	2.7
			Weight per unit area	67.5g/m ²
			Colour reference	"Silver"
			Flame retardant details	See Note 2 Below
	Polymer	Generic type	Polyurethane	
		Product reference	"Polyurethane 2-Part"	
		Name of manufacturer	See Note 1 Below	
		Thickness	2 microns	
		Weight per unit area	2.4g/m ²	
		Colour reference	"Clear"	
		Flame retardant details	See Note 1 Below	
		Polyester	Generic type	Polyester
	Product reference		"PET23"	
	Name of manufacturer		See Note 1 Below	
	Thickness		23 microns	
	Specific gravity		1.4	
	Weight per unit area		32.2g/m ²	
	Colour reference		"Clear"	
	Flame retardant details		See Note 1 Below	
	Polymer	Generic type	Polyurethane	
Product reference		"Polyurethane 2-Part"		
Name of manufacturer		See Note 1 Below		
Thickness		2 microns		
Weight per unit area		2.4g/m ²		
Colour reference		"Clear"		
Flame retardant details		See Note 1 Below		
2 nd ply		Polyester	Generic type	Polyester
	Product reference		"PET23"	
	Name of manufacturer		See Note 1 Below	
	Thickness		23 microns	
	Specific gravity		1.4	
	Weight per unit area		32.2g/m ²	
	Colour reference		"Clear"	
	Flame retardant details		See Note 1 Below	
Polymer	Generic type	Polyurethane		
	Product reference	"Polyurethane 2-Part"		
	Name of manufacturer	See Note 1 Below		
	Thickness	2 microns		
	Weight per unit area	2.4g/m ²		
	Colour reference	"Clear"		
	Flame retardant details	See Note 1 Below		

Continued on next page

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Author: C. Meachin

Issue Date: 16th September 2014

Client: Temati

Issue No.: 1



Self-adhesive aluminium laminate continued	3 rd ply	Aluminium	Generic type	Aluminium
			Product reference	"A9 – ALUFOIL"
			Name of manufacturer	See Note 1 Below
			Thickness	9 microns
			Specific gravity	2.7
			Weight per unit area	24.3g/m ²
			Colour reference	"Silver"
			Flame retardant details	See Note 2 Below
	Polymer	Polyurethane	Generic type	Polyurethane
			Product reference	"Polyurethane 2-Part"
			Name of manufacturer	See Note 1 Below
			Thickness	2 microns
			Weight per unit area	2.4g/m ²
			Colour reference	"Clear"
			Flame retardant details	See Note 1 Below
			Polyester	Polyester
	Product reference	"PET12"		
	Name of manufacturer	See Note 1 Below		
	Thickness	23 microns		
	Specific gravity	1.4		
	Weight per unit area	32.2g/m ²		
	Colour reference	"Clear"		
	Flame retardant details	See Note 1 Below		
	Polymer	Polyurethane	Generic type	Polyurethane
			Product reference	"Polyurethane 2-Part"
			Name of manufacturer	See Note 1 Below
			Thickness	2 microns
			Weight per unit area	2.4g/m ²
Colour reference			"Clear"	
Flame retardant details			See Note 1 Below	
Polyester			Polyester	Generic type
	Product reference	"PET12"		
	Name of manufacturer	See Note 1 Below		
	Thickness	12 microns		
	Specific gravity	1.4		
	Weight per unit area	16.8g/m ²		
	Colour reference	"Clear"		
	Flame retardant details	See Note 1 Below		
Adhesive	Acrylic	Generic type	Acrylic	
		Product reference	"PSA"	
		Name of manufacturer	See Note 1 Below	
		Colour reference	"Clear / Yellowed"	
		Application thickness	8-10 microns	
		Application method	Gravure cylinder	
		Flame retardant details	See Note 1 Below	
		Curing process	See Note 1 Below	

Continued on next page

Substrate	Product reference	"Promat – Brandschutzbauplatten; Promatect-H"
	Generic type	25mm air gap calcium silicate based board
	Name of manufacturer	Promat
	Thickness	36mm - 12.5mm board with 2 x 12.5mm thick strips around the edges to form a 25mm air gap behind the reverse face of the specimen
	Density	870kg/m ³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		See Note 1 Below

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

Note 2: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Test Results

Results and observations The test results for the individual specimens, together with observations made during the test and comments on any difficulties encountered during the test are given in Appendix 1.

Classification **In accordance with the class definitions given in BS 476: Part 7: 1997; the specimens tested are classified as Class 1.**

Criteria for classification If the prefix 'D' or suffix 'R' or 'Y' is included in the classification, this indicates that the results should be treated with caution. An explanation of the reason for the prefix and suffixes is given in Appendix 2, together with the classification limits specified in the Standard.

Applicability of test result The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

The test results relate only to the specimens of the product in the form in which they were tested. Small differences in the composition or thickness of the product may significantly affect the performance during the test and may therefore invalidate the test results. Care should be taken to ensure that any product which is supplied or used is fully represented by the specimens which were tested.

Validity The specification and interpretation of fire test methods are the subject of ongoing development and refinement. Changes in associated legislation may also occur. For these reasons it is recommended that the relevance of test reports over five years old should be considered by the user. The laboratory that issued the report will be able to offer, on behalf of the legal owner, a review of the procedures adopted for a particular test to ensure that they are consistent with current practices, and if required may endorse the test report.

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Appendix 2 – Classification criteria

Classification of spread of flame	Spread of Flame at 1.5 min		Final Spread of Flame		
	Classification	Limit (mm)	Limit for one specimen (mm)	Limit (mm)	Limit for one specimen (mm)
Class 1		165	165 + 25	165	165 + 25
Class 2		215	215 + 25	455	455 + 45
Class 3		265	265 + 25	710	710 + 75

Class 4 Exceeding the limits for class 3

Explanation of prefix and suffixes which may be added to the classification

1. A suffix R is added to the classification if more than six specimens are required in order to obtain six valid test results (e.g. class 2R).
2. A prefix D is added to the classification of any product which does not comply with the surface characteristics specified in the Standard and has therefore been tested in a modified form (e.g. class D3).
3. A suffix Y is added to the classification if any softening and/or other behaviour that may affect the flame spread occurs (e.g. class 3Y).

For example, a classification of D3RY could be achieved indicating (a) a modified surface has been used; (b) a class 3 result has been obtained; (c) additional specimens have been used to obtain 6 valid results and; (d) softening and/or other behaviour has occurred which is considered to have affected the test result.

Revision History

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Reason for Revision:	

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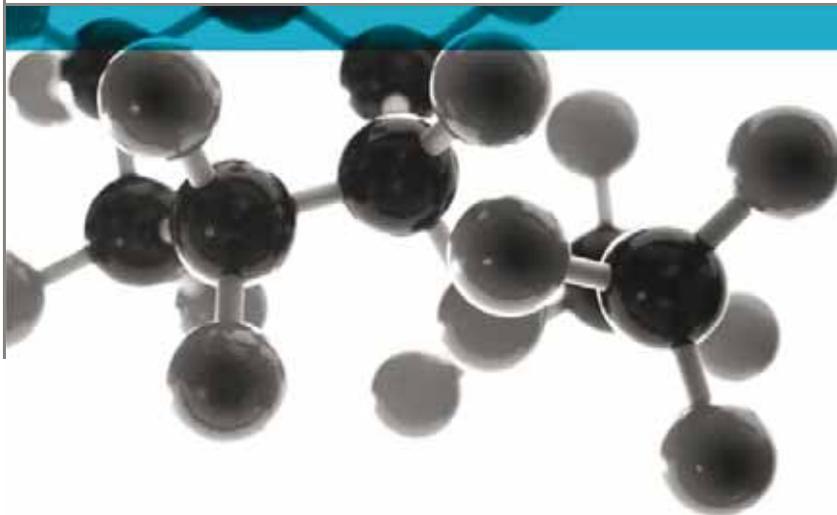


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Class 0 Summary Report



Including Opinion Of Compliance With The Requirements For A Class 0 Surface As Defined In Paragraph A13(b) Of Approved Document B (Volumes 1 & 2), (2006 Edition) 'Fire Safety' To The Building Regulations 2000

Date: 16th September 2014

Issue No.: 1

Page 1

A Report To: Temati

Document Reference: 344193 & 344194

**Testing
Advising
Assuring**

Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No.SC 70429
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Executive Summary

Objective To assess the results of tests to BS 476:Part 6:1989+A1: 2009 and BS 476:Part 7:1997, obtained on specimens of the following product and to provide an opinion of compliance with the requirements for a Class 0 surface, as defined in Approved Document B to the Building Regulations 2000.

Generic Description	Product reference	Thickness	Weight per unit area or density
Flame retardant grade self-adhesive 5 ply aluminium laminate adhered to an 'air gap' calcium silicate substrate	"Foster 62-05 Vapor Fas"	12.62mm * (Part 6) 36.6mm * (Part 7)	17.87kg/m ² *
Individual components used to manufacture composite:			
Self-adhesive aluminium laminate	"Foster 62-05 Vapor Fas"	0.108mm	197.5g/m ²
Adhesive	"PSA"	8-10 microns	Not stated
Substrate	"Promat Brandschutzbauplatten; Promatect-H"	Part 7: 12.5mm with 2 x 12.5mm thick strips around the edges to form 25mm airgap Part 6: 12.5mm thick strips around the edges to form airgap	870kg/m ³
*Determined by Exova Warringtonfire			
Please see pages 5, 6 & 7 of this test report for the full description of the product tested			

Test Sponsor Temati, Unit 3a Isabella Court, Millennium Business Park, Mansfield, NG19 7JZ.

Opinion: We consider the results of the tests to BS 476:Part 6:1989+A1: 2009 and BS 476:Part 7: 1997, demonstrate that the product, as tested, complies with the requirements for Class 0, as defined in paragraph A13(b) of Approved Document B, 'Fire Safety', to the Building Regulations 2000.

Date of Test 9th September 2014

Signatories

	
Responsible Officer C. Meachin * Technical Officer	Authorised S. Deeming * Operations Manager

* For and on behalf of **Exova Warringtonfire**.

Report Issued: 16th September 2014

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Document No.: 344193 & 344194

Page No.: 2 of 9

Author: C. Meachin

Issue Date: 16th September 2014

Client: Temati

Issue No.: 1

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Test Details

Terms Reference Of To assess the results of tests to BS 476:Part 6:1989+A1: 2009 and BS 476:Part 7:1997, obtained on specimens of a product and to provide an opinion of compliance with the requirements for a Class 0 surface, as defined in Approved Document B to the Building Regulations 2000.

Introduction Specimens of a product have been tested in accordance with the test methods specified in BS 476: Part 6: 1989+A1: 2009 'Method of test for fire propagation for products' and BS 476: Part 7: 1997 'Method of test to determine the classification of the surface spread of flame of products'. The results of the tests are fully reported in the **Exova Warringtonfire** test reports No's. 344193 and 344194.

This summary test report has been prepared at the request of the sponsor and relates the results of the tests to the requirements for a Class 0 surface of a material or composite product, as defined in paragraph A13(b) of Approved Document B, 'Fire Safety', to the Building Regulations 2000.

This summary should be read in conjunction with, and not accepted as a substitute for, the **Exova Warringtonfire** test reports No's. 344193 and 344194. Those test reports may include additional information which may be relevant to the assessment of the potential fire hazard of the product.

The specimens were tested adhered to an airgap as defined in test standards BS 476:Part 6:1989+A1: 2009 and BS 476:Part 7:1997.

Face subjected to tests The specimens were mounted in the test positions such that the aluminium face was exposed to the heating conditions of the tests.

Results of test The following results were obtained for the specimens, which were tested.

BS 476: Part 6: 1989	Fire propagation index, I	=	4.7
	subindex, i_1	=	3.8
	subindex, i_2	=	0.9
	subindex, i_3	=	0.0

BS 476: Part 7: 1997	Class 1 surface spread of flame
---------------------------------	---------------------------------

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of the test, they are not intended to be the sole criterion for assessing the potential hazard of the product in use.

Description of Test Specimens

The description of the specimens given below has been prepared from information provided by the sponsor of the test. All values quoted are nominal, unless tolerances are given.

General description		Flame retardant grade self-adhesive 5 ply aluminium laminate adhered to an 'air gap' calcium silicate substrate		
Product reference		"Foster 62-05 Vapor Fas"		
Name of manufacturer		See Note 1 Below		
Overall thickness		12.62mm (BS 476 Part 6) (determined by Exova Warringtonfire) 36.6mm (BS 476 Part 7) (determined by Exova Warringtonfire)		
Overall weight per unit area		17.87kg/m ² (determined by Exova Warringtonfire)		
Thickness of laminate		0.108mm (stated by sponsor) 0.11mm (determined by Exova Warringtonfire)		
Weight per unit area of laminate		197.5 g/m ² (stated by sponsor) 202.45 g/m ² (determined by Exova Warringtonfire)		
Self-adhesive aluminium laminate	1 st ply	Aluminium	Generic type	Aluminium
			Product reference	"A25 – ALUFOIL"
			Name of manufacturer	See Note 1 Below
			Thickness	25 microns
			Specific gravity	2.7
			Weight per unit area	67.5g/m ²
			Colour reference	"Silver"
			Flame retardant details	See Note 2 Below
	Polymer	Generic type	Polyurethane	
		Product reference	"Polyurethane 2-Part"	
		Name of manufacturer	See Note 1 Below	
		Thickness	2 microns	
		Weight per unit area	2.4g/m ²	
		Colour reference	"Clear"	
	Flame retardant details	See Note 1 Below		
	Polyester	Generic type	Polyester	
		Product reference	"PET23"	
		Name of manufacturer	See Note 1 Below	
		Thickness	23 microns	
		Specific gravity	1.4	
		Weight per unit area	32.2g/m ²	
	Colour reference	"Clear"		
	Flame retardant details	See Note 1 Below		
	Polymer	Generic type	Polyurethane	
Product reference		"Polyurethane 2-Part"		
Name of manufacturer		See Note 1 Below		
Thickness		2 microns		
Weight per unit area		2.4g/m ²		
Colour reference		"Clear"		
Flame retardant details	See Note 1 Below			
2 nd ply		Generic type	Polyester	
		Product reference	"PET23"	
		Name of manufacturer	See Note 1 Below	
		Thickness	23 microns	
		Specific gravity	1.4	
		Weight per unit area	32.2g/m ²	
Colour reference	"Clear"			
Flame retardant details	See Note 1 Below			

Continued on next page

Self-adhesive aluminium laminate continued	3 rd ply	Aluminium	Generic type	Aluminium
			Product reference	"A9 – ALUFOIL"
			Name of manufacturer	See Note 1 Below
			Thickness	9 microns
			Specific gravity	2.7
			Weight per unit area	24.3g/m ²
			Colour reference	"Silver"
			Flame retardant details	See Note 2 Below
	4 th ply	Polymer	Generic type	Polyurethane
			Product reference	"Polyurethane 2-Part"
			Name of manufacturer	See Note 1 Below
			Thickness	2micron
			Weight per unit area	2.4g/m ²
			Colour reference	"Clear"
			Flame retardant details	See Note 1 Below
	4 th ply	Polyester	Generic type	Polyester
			Product reference	"PET12"
			Name of manufacturer	See Note 1 Below
			Thickness	23 microns
			Specific gravity	1.4
			Weight per unit area	32.2g/m ²
			Colour reference	"Clear"
			Flame retardant details	See Note 1 Below
	4 th ply	Polymer	Generic type	Polyurethane
			Product reference	"Polyurethane 2-Part"
			Name of manufacturer	See Note 1 Below
			Thickness	2 microns
			Weight per unit area	2.4g/m ²
Colour reference			"Clear"	
Flame retardant details			See Note 1 Below	
5 th ply	Polyester	Generic type	Polyester	
		Product reference	"PET12"	
		Name of manufacturer	See Note 1 Below	
		Thickness	12 microns	
		Specific gravity	1.4	
		Weight per unit area	16.8g/m ²	
		Colour reference	"Clear"	
		Flame retardant details	See Note 1 Below	
Adhesive	Adhesive	Generic type	Acrylic	
		Product reference	"PSA"	
		Name of manufacturer	See Note 1 Below	
		Colour reference	"Clear / Yellowed"	
		Application thickness	8-10 microns	
		Application method	Gravure cylinder	
		Flame retardant details	See Note 1 Below	
		Curing process	See Note 1 Below	

Continued on next page

Substrate	Product reference	"Promat – Brandschutzbauplatten; Promatect-H"
	Generic type	Air gap calcium silicate based board
	Name of manufacturer	Promat
	Thickness	36mm - 12.5mm board with 2 x 12.5mm thick strips around the edges to form a 25mm air gap behind the reverse face of the specimen (as per BS 476 Part 7 test standard air gap requirements) 12.5mm thick calcium silicate based board strips around the edges to form an airgap behind the reverse face of the specimen (as per BS 476 Part 6 test standard air gap requirements)
	Density	870kg/m ³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		See Note 1 Below

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

Note 2: The sponsor of the test has confirmed that no flame retardant additives were utilised in the production of the component.

Classification

Opinion We consider the results of the tests detailed above demonstrate that the product, as tested, complies with the requirements for Class 0, as defined in paragraph A13(b) of Approved Document B, 'Fire Safety', to the Building Regulations 2000.

Validity of opinion This opinion is based on the requirements of the Building Regulations at the date of this report. If the Building Regulations are revised or amended in any way subsequent to that date, care must be taken to ensure that this opinion is not invalidated by those revisions or amendments.

The opinion has been formulated on the assumption that the specimens are representative of the product in practice. **Exova Warringtonfire** was not involved in any sampling or selection procedures which would confirm this or in any audit testing which would provide confidence in the consistency of the product in the tests.

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Revision History

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

Issue No :	Re-issue Date:
Revised By:	Approved By:
Reason for Revision:	

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Testing. calibrating. advising

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**UL 723 (ASTM E 84) Surface Burning Characteristics
of "62-05 Vapor Fas" Vapour Barrier Jacketing**

A Report To:	Temati UK Ltd. Unit 3a, Isabella Court Millenium Business Park Mansfield United Kingdom NG19 7JZ
Phone:	01623 636169
Attention: E-mail:	Andrew Cholerton ac@temati.co.uk
Submitted by:	Exova Warringtonfire North America
Report No.	16-002-579 4 Pages
Date:	October 24, 2016

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

SPECIFICATIONS OF ORDER

Determine the Flame Spread and Smoke Developed Indices based upon a single test conducted in accordance with UL 723 (Edition 10), as per Temati UK Ltd. reference Purchase Order No. 36001640 and Exova Warringtonfire North America Quotation No. 16-002-449,350 RV1 dated October 17, 2016.

SAMPLE IDENTIFICATION (Exova sample identification number 16-002-S0579)

Reflective material with adhesive (peel-and-stick) backing, described as, "5 Ply Vapour Barrier Jacketing", identified as: "62-05 Vapor Fas"

TEST PROCEDURE

The method, designated as UL 723 (Edition 10), "Standard for Test for Surface Burning Characteristics of Building Materials" (procedurally similar to ASTM E 84), is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results are expressed in terms of Calculated Flame Spread (CFS), Calculated Smoke Developed (CSD), Flame Spread Index (FSI) (CFS rounded to the nearest multiple of 5), and Smoke Developed Index (SDI) (CSD rounded accordingly).

Although the procedure is applicable to materials, products and assemblies used in building construction for development of comparative surface spread of flame data, the test results may not reflect the relative surface burning characteristics of tested materials under all building fire conditions.

SAMPLE PREPARATION

The 0.005 inch (0.1 mm) thick test specimen was adhered (peel-and-stick) to a 0.25 inch (6 mm) thick fiberglass reinforced cement board substrate. The test specimen consisted of a total of 3 sections of material, each approximately 21 inches (533 mm) in width by 96 inches (2438 mm) in length. Prior to testing, the specimen was conditioned to constant weight at a temperature of $73 \pm 5^\circ\text{F}$ ($23 \pm 3^\circ\text{C}$) and a relative humidity of $50 \pm 5\%$. During testing, the specimen was self-supporting.

The testing was performed on: 2016-10-19

SUMMARY OF TEST PROCEDURE

The tunnel is preheated to $150 \pm 5^\circ\text{F}$ ($66 \pm 2.8^\circ\text{C}$), as measured by the floor-embedded thermocouple located 23.25 feet (7087 mm) downstream of the burner ports, and allowed to cool to $105 \pm 5^\circ\text{F}$ ($40.5 \pm 2.8^\circ\text{C}$), as measured by the floor-embedded thermocouple located 13 feet (3962 mm) from the burners. The tunnel lid is raised and the test specimen is placed along the ledges of the tunnel so as to form a continuous ceiling 24 feet (7315 mm) long, 12 inches (305 mm) above the floor. Three 8-foot (2438 mm) sections of 0.25 inch (6 mm) cement board are then placed on the back side of the sample to protect the tunnel lid, and the lid is then lowered into place.

SUMMARY OF TEST PROCEDURE (continued)

Upon ignition of the gas burners, the flame spread distance is observed and recorded every second. Flame spread distance versus time is plotted, ignoring any flame front recessions. Calculations are based on comparison with flame spread characteristics of select red oak, determined in calibration trials and arbitrarily established as 100. If the area under the curve (A) is less than or equal to 97.5 min·ft, CFS = 0.515·A; if greater, CFS = 4900/(195-A). Values are then rounded to the nearest multiple of 5 to determine Flame Spread Index (FSI).

Smoke Developed Index is determined by dividing the total area under the obscuration curve for the test sample by the area under the curve for red oak and then multiplying by 100. If under 200, the SDI is rounded to the nearest multiple of 5. If 200 or greater, SDI is rounded to the nearest value of 50.

TEST RESULTS

Sample: "62-05 Vapor Fas"

Calculated Flame Spread (CFS)	Calculated Smoke Developed (CSD)	Flame Spread Index (FSI)	Smoke Developed Index (SDI)
0.0	12.8	0	15

Observations of Burning Characteristics

- The specimen ignited approximately 72 seconds after exposure to the test flame. Warping behavior was observed.
- The flame front did not advance past the baseline.

Authorities having jurisdiction usually refer to these categories:

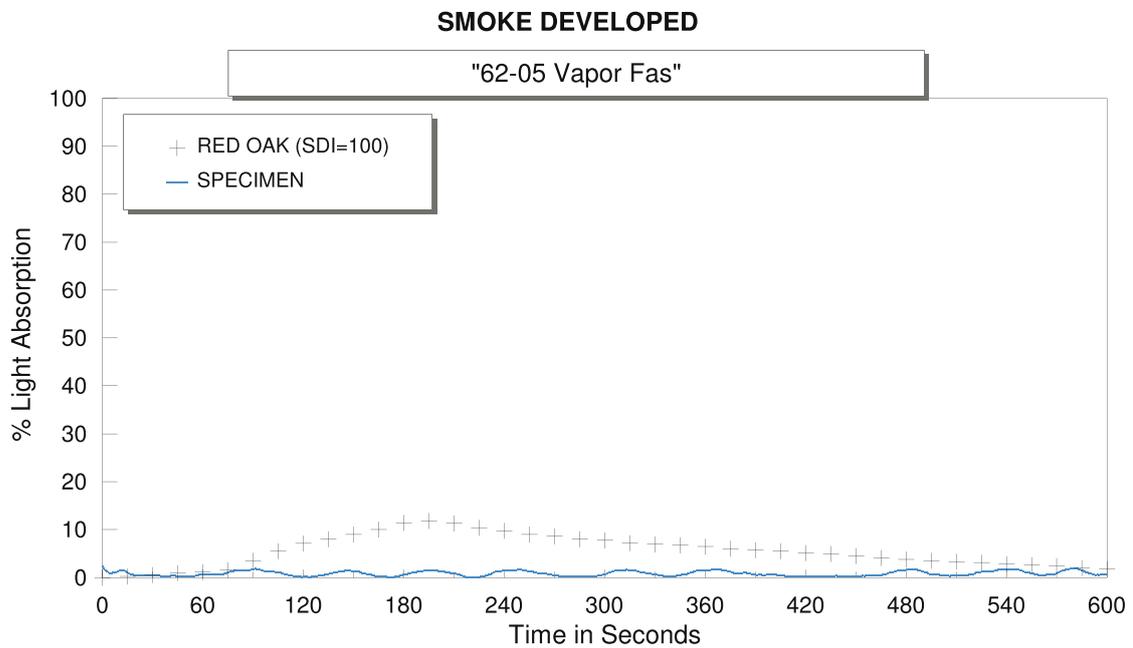
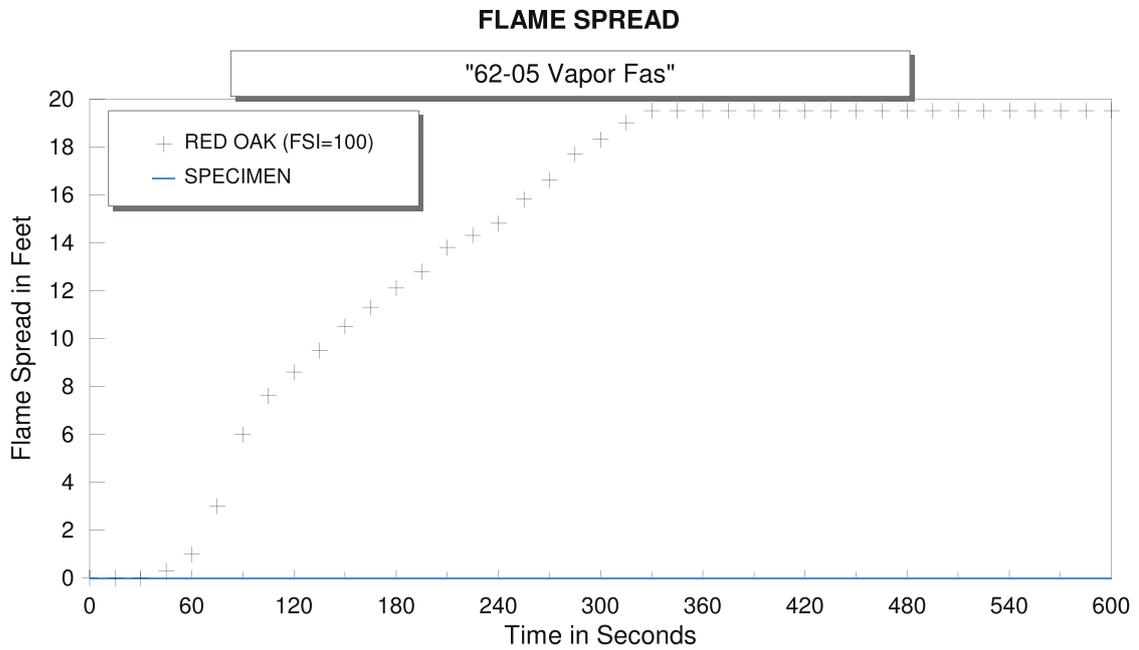
	Flame-Spread Index	Smoke Development
Class 1 or A	0 - 25	450 Maximum
Class 2 or B	26 - 75	450 Maximum
Class 3 or C	76 - 200	450 Maximum

Note: This is an uncontrolled electronic copy of the report. Signatures are on file with the original.

Robert A. Carleton,
Technologist.

Ian Smith,
Technical Manager.

Note: This report and service are covered under Exova Canada Inc. Standard Terms and Conditions of Contract which may be found on the Exova website (www.exova.com), or by calling 1-866-263-9268.



**Flame Spread
Index (FSI)**
0

**Smoke Developed
Index (SDI)**
15

**Maximum Air
Temperature (°F)**
515

FINAL REPORT

REACTION TO FIRE TEST

TEST SPONSOR:

Temati

P.O. Box: 124870

Sharjah, UAE

T: +971 6 558 7101, F: +971 6 558 7193

Website: www.temati.com

TESTED MATERIAL/ASSEMBLY:

Vapor-Fas 62-05 Jacketing applied on a fiber cement board substrate fully covered

TEST STANDARD:

ASTM E84-15b: Standard Test Method for Surface Burning Characteristics of Building Materials



**THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS**

Issue Date: 26-Jan-16

File: QA026

File Name: QA026 test report

PO BOX 26385, DUBAI UAE

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DUBAI

ABU DHABI

DOHA

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Accreditation

Testing

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories with

1. United Kingdom Accreditation Service (UKAS) - Testing Laboratory : **4439**
2. International Accreditation Service (IAS) - Testing Laboratory : **TL-626**
3. GCC Accreditation Center (GAC) -Testing Laboratory : **ATL-0017**
www.ukas.com www.iasonline.org www.gcc-accreditation.org



Inspection

ISO/IEC 17020: Conformity Assessment - Requirements for the operation of various types of bodies performing inspection with

International Accreditation Service (IAS) as a Type A (Third Party) Inspections Body (AC98 & ISO 17020:2012): **AA-748**

Accredited to conduct Inspections as per International Building Code (IBC) Chapter 17, Section 1704 and Section 1705 with

International Accreditation Service (IAS) as a Special Inspection Agency (AC291): **SIA-211**

Certification

ISO/IEC 17065: 2012: Conformity Assessment - Requirements for bodies certifying products, processes and services with

United Kingdom Accreditation Service (UKAS) - Certification Body: **6762**

Memberships

Members of European Group of Organization for Fire Testing, Inspection and Certification

www.egolf.org.uk

Member of International Trade Council

www.thetradecouncil.com

Member of Association for Specialist Fire Protection

www.asfp.org.uk

Member of Centre for Window and Cladding Technology

www.cwct.co.uk



The work which is a subject of this document falls wholly or partly under the accreditation marked below:

ISO 17025 UKAS	<input checked="" type="checkbox"/>	ISO 17020 IAS	<input type="checkbox"/>
ISO 17025 IAS	<input type="checkbox"/>	ISO 17065 UKAS	<input type="checkbox"/>
ISO 17025 GAC	<input checked="" type="checkbox"/>	AC 291 IAS	<input type="checkbox"/>
Non-accredited test	<input type="checkbox"/>		



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1. INTRODUCTION

Determination of the flame spread index and the smoke developed index of Vapor-Fas 62-05 Jacketing applied on a fiber cement board substrate fully covered as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Temati

P.O. Box: 124870

Sharjah, UAE

T: +971 6 558 7101

F: +971 6 558 7193

Website: www.temati.com

3. TESTING LABORATORY

Thomas Bell-Wright International Consultants

25b Street Ras Al Khor Industrial Area

P.O. Box 26385

Dubai, U.A.E.

4. DATE OF TEST

Sample received: 14-Jan-16

Test date: 19-Jan-16

The test has been witnessed by:

Name	Company	Contact Number
S. Cherrington	Temati	+971 52 906 1582
S. Johnson		+ 971 55 900 7208



5. SPECIMEN DESCRIPTION

Product Tested	Vapor-Fas 62-05 Jacketing applied on a fiber cement board substrate fully covered	
Product Name	Vapor-Fas 62-05 Jacketing	
Fire side	Smooth surface	
Product Description (as stated)	Composition	5 ply Aluminum / Polymer laminate with pressure sensitive adhesive and release liner
	Standard Roll Size	0.5m x 50m
	Total film thickness	5 mils (0.12mm)
	Finish	62-05S: Smooth, Aluminum
	Color	Aluminum
Dimensions per panel	2440 x 600 (l x w)	
No. of panel	3	
Total dimension	7320 x 600 (l x w)	
Specimen placement	3 sections of Vapor-Fas 62-05 Jacketing applied on a fiber cement board substrate fully covered were butt jointed end-to-end. The test specimen was placed directly to the tunnel ledges with the smooth surface towards the flame source.	

The test specimen was submitted by the client and TBWIC has not been involved in the selection and configuration of the specimen.

6. METHOD OF TEST

6.1. Placing of test specimen

The test specimen consisted of 3 sections of Vapor-Fas 62-05 Jacketing applied on a fiber cement board substrate fully covered. The total dimensions of the specimen were 7320 x 600 (l x w).

Several sections of cement board butt jointed end-to-end with overall dimensions of 7350 x 600 mm (l x w), were placed at the back of the sample to protect the furnace lid assembly.

6.2. Test Method

The specimen was installed horizontally in the Steiner Tunnel and supported by the ledges. The smooth surface of Vapor-Fas 62-05 Jacketing (fire side) was exposed to a flaming exposure during the 10 minute test duration.

Flame spread and density of the smoke are measured and recorded while the results are computed against the standard calibration materials (cement board and red oak flooring).

6.3. Conditioning

After delivery on 14-Jan-16, the specimen was stored in room temperature for 5 days prior to the test at 20.2 to 25.8°C and 45 to 55% relative humidity.

7. OBSERVATION

Test Data and Observation

Observations	
Ignition Time (min:sec)	1:40
Time to maximum flame front advance (min:sec)	2:10
Maximum flame spread (ft)	0
Time to end of tunnel reached (min:sec)	Not Reached
Maximum temp recorded at the exposed thermocouple located near the end of the tunnel (°F / °C)	574/301
Dripping (min:sec)	None
Flaming on the floor (min:sec)	None
After flame on the top (min:sec)	None
After flame on the floor (min:sec)	None
Delamination (min:sec)	None
Sagging (min:sec)	None
Shrinkage (min:sec)	None
Fallout (min:sec)	None
FS*Time Area (ft*min)	4.49
Smoke Area (%A*min)	7.67
Red Oak Smoke Area (%A*min)	91.5

8. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

The test results are:

FLAME SPREAD INDEX (FSI)	0
SMOKE DEVELOPED INDEX (SDI)	10

Results are valid for the tested configuration only.

9. CLASSIFICATIONS

The following information is designed to help put these test results into context. Flame Spread Index and Smoke Developed Index results from an ASTM E84 test are often used by regulatory agencies to approve materials for various applications. For example, the International Building Code 2012, Section 803.1.1 requires that:

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723-10th Ed. 2008. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

Class A: Flame spread index 0 - 25; smoke-developed index 0 - 450.

Class B: Flame spread index 26 - 75; smoke-developed index 0 - 450.

Class C: Flame spread index 76 - 200; smoke-developed index 0 - 450.

Note that the above example is the IBC requirement for interior wall and ceiling finishes only; your application may be different.



10. LIMITATIONS

Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by the testing materials that remain in place

Thomas Bell-Wright International Consultants recommend that the relevance of test reports should be considered after a period of five years.

This test report is respectfully submitted by: Thomas Bell-Wright International Consultants

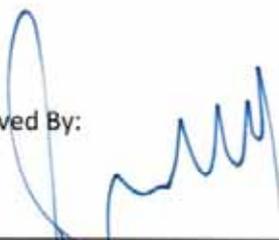
Prepared By:


Romano Parungao
Fire Testing Engineer

Reviewed By:


Fredilyn Paragoso
Fire Testing Engineer

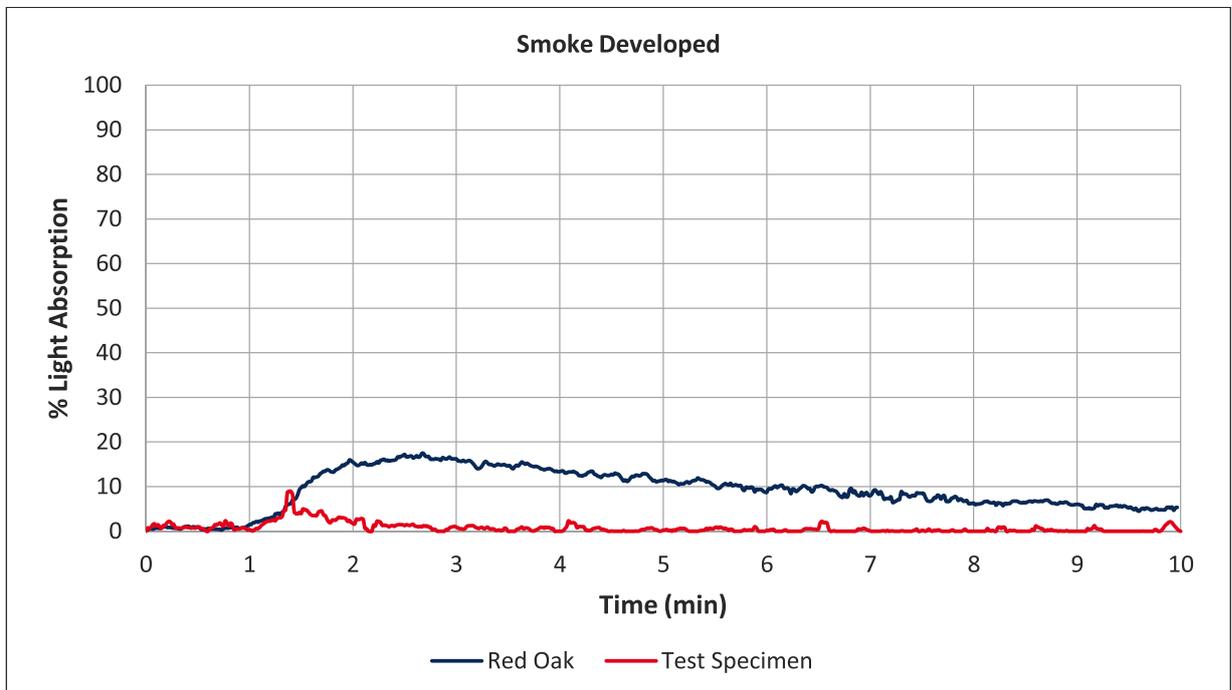
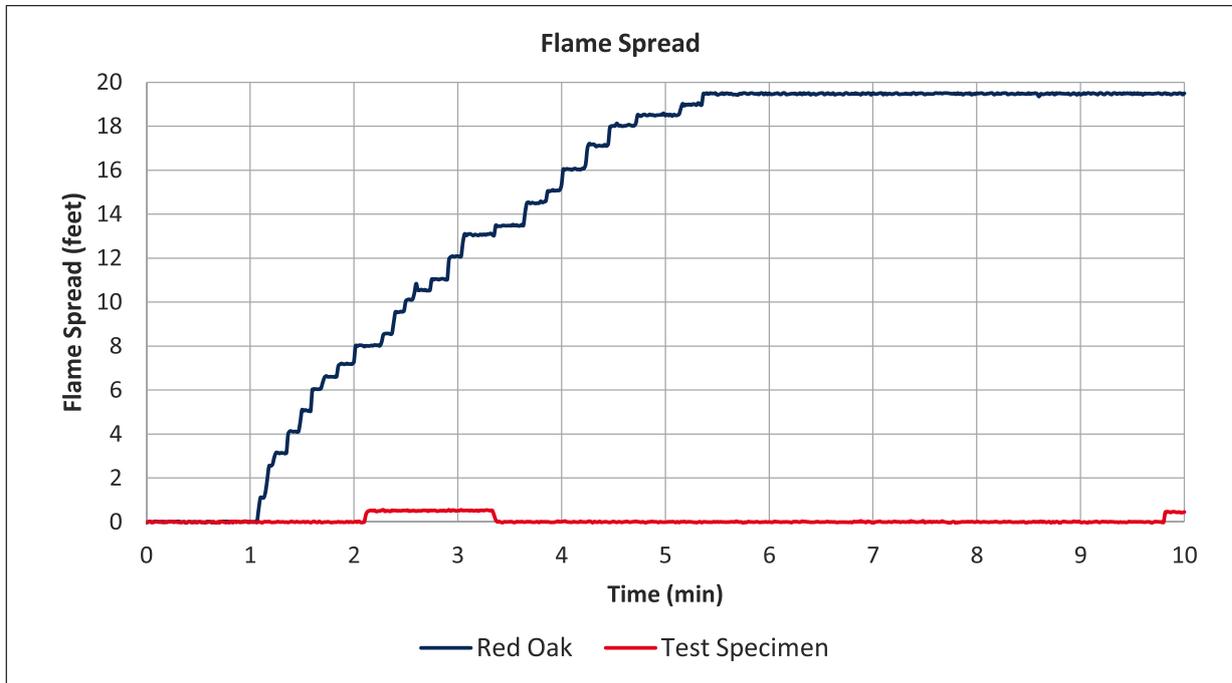
Approved By:


David Campbell, GFireE
Regional Director of Fire Compliance





11. APPENDIX 1- GRAPHS





12. APPENDIX 1- PICTURES



Photo 1: Specimen before the test
(Non-fire side)



Photo 2: Specimen before the test
(Fire side)



Photo 3: Specimen after the test
(located near the fire end)



Photo 4: Specimen after the test
(located near the exhaust end)

PROCES-VERBAL DE CLASSEMENT DE REACTION AU FEU D'UN MATERIAU

Valable 5 ans à compter du 30 Juin 2016

Selon l'arrêté du 21 novembre 2002 relatif à la réaction au feu des produits de construction et d'aménagement
Laboratoire agréé du Ministère de l'Intérieur (arrêté du 23/03/2010 modifiant l'arrêté du 05/02/1959 modifié)

Procès-verbal n° 1592/03/165 D

Et annexe de 1 page

Matériau présenté par : TEMATI
1 rue Jules Verne – ZA Nord
85150 La Mothe Achard
France

Référence commerciale : FOSTER 62-05 VAPOR-FAS

Description sommaire : Revêtement pare-vapeur. Procédé de fabrication : laminage de 5 couches aluminium / polymère adhésivé en face interne sur plaque de silicate.
Application bâtiment
Epaisseur déclarée : 0.12mm
Epaisseur nominale totale : 9mm (mesurée sur plaque de silicate)
Masse volumique mesurée : 990,7 g/dm³ (mesurée avec support)
Masse surfacique calculée : 89,2 g/dm².
Coloris présenté : Blanc, Noir, Gris aluminium
Coloris validés : Blanc, Noir, Gris aluminium

Nature de l'essai : NF P 92-501 - Essai par rayonnement
Référence du rapport d'essai : RE 1M 1592/03/165 D du 30/06/2016

Classement :

M1

sur support silicate de calcium

Durabilité du classement : Non limitée a priori.
Compte tenu des critères résultants des essais décrits dans le rapport annexé.

Ce procès-verbal atteste uniquement des caractéristiques de l'échantillon soumis aux essais et ne préjuge pas des caractéristiques de produits similaires. Il ne constitue donc pas une certification de produits au sens de l'article L. 115-27 du code de la consommation et de la loi du 3 juin 1994.

« Valable pour toute application pour laquelle le produit n'est pas soumis au marquage CE »

A Bruay-la-Buissière, le 30 Juin 2016

Pour ordre, suppléant du Président, Franck POUTCH



Skander KHELIFI

Le Responsable de la classification



Thomas TURF

Nota. - Sont seules autorisées les reproductions intégrales et par photocopie du présent procès-verbal de classement ou de l'ensemble procès-verbal de classement et rapport d'essais annexé.



CREPIM
Société par Actions Simplifiée -792 178 816 R.C.S. ARRAS
Siège social : Parc de la Porte Nord - rue Christophe Colomb.
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Tél.: 03.21.61.64.00 Fax : 03.21.61.64.01
E-mail : contact@crepim.fr www.crepim.fr
SIRET 792 178 816 00015 / APE 7112B / T.V.A. FR85 792 178 816



ACCREDITATION N°1-5860
Portée disponible sur www.cofrac.fr

Rapport d'essai

Rapport d'essai n° RE 1M 1592/03/165 D
Date d'émission 30/06/16
Responsable Skander KHELIFI
Vos références 46000324
Date de commande 08/06/16
Pages 1 sur 1

Adressé à
Société TEMATI
Nom Monsieur Jean-François LE VEN
Adresse 1 rue Jules Verne - ZA nord
Code postal 85150 **Ville** LA MOTHE ACHARD
Pays France

Norme d'essai : NF P 92-501:1995 : Essai par rayonnement applicables aux matériaux rigides ou rendus tels de toute épaisseur et aux matériaux souples d'épaisseur supérieure à 5 mm

Essai accrédité COFRAC : L'accréditation du COFRAC atteste de la compétence des laboratoires pour les seuls essais couverts par l'accréditation.

Produit testé

Désignation : FOSTER 62-05 VAPOR-FAS
Description : Revêtement pare-vapeur. Procédé de fabrication : laminage de 5 couches aluminium / polymère adhésivé en face interne sur plaque de silicate.
Masse Volumique : 990,7 g/dm³ (mesurée avec support) **Masse Surfaccique :** 89,2 g/dm² (calculée)
Couleur : Blanc, Noir, Gris aluminium
Remarques : Utilisation finale : pare-vapeur utilisé sur isolant en service froid.
Taille : 400 mm x 300 mm x 9 mm
Conditionnement : 23 ± 2 °C, 50 ± 5 % HR
Date Réception : 20/06/16

L'attention est attirée sur le fait que les résultats obtenus avec l'échantillon objet du présent rapport d'essais ne sont pas généralisables sans justification de la représentativité des échantillons et essais.

Date Essai : 29/06/16

Résultats

	essai 1	essai 2	essai 3	essai 4	essai 5	essai 6
ti1 (s)	Pas d'inflammation					
ti2 (s)						
td1 (s)						
td2 (s)						
e1 (s)						
e2 (s)						
Durée d'inflammation (s)	0,0	0,0	0,0	0,0	0,0	0,0
Somme Hauteur (cm)						
Valeur q selon NF P 92-507	0,0	0,0	0,0	0,0	0,0	0,0

ti1/td1/e1 : temps d'inflammation / de dépassement du bol / d'extinction de la face inférieure.

ti2/td2/e2 : temps d'inflammation / de dépassement du bol / d'extinction de la face supérieure.

Observations : Les essais 1 et 2 correspondent à la couleur "Blanc", les essais 3 et 4 correspondent à la couleur "Noir", les essais 5 et 6 correspondent à la couleur "Gris aluminium".

R.AZAOUAGH
Responsable de l'essai

S. KHELIFI
Responsable Technique

F. POUTCH
Président

4WT NO: 3449
JOB NO: 2703
CLIENT REF: PO 36001361
REPORT NO: 1908

4ward Testing Ltd
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Fax: +44 (0)1798 344482

info@4wardtesting.co.uk

www.4wardtesting.co.uk

REPORT ON TESTING OF MULTI-LAMINATE TAPE WITH ADHESIVE BACKING

Supplied by:
Temati UK Ltd
Unit 3A, Millenium Business Park
Mansfield
Nottinghamshire
NG19 7JZ

Report Prepared by:

Lesley J Komatsu

Report on the testing of Multi-laminate Tape with Adhesive Backing

4ward Testing Ltd were contacted by Temati UK Ltd, Unit 3A, Millenium Business Park, Mansfield, Nottinghamshire, NG19 7JZ and asked to carry out tests on a Multi-laminate Tape with Adhesive Backing

Identification

Material: Multi-laminate tape with Adhesive Backing
Customer Identification: -
Customer Reference: PO 3001361
4ward Sample No: 34449
Job No: 2703
Date Received: 19/02/2016

Test Data

The material was tested as received from the customer with samples prepared by the Laboratory.

The following tests were carried out:

Tear Resistance to ASTM D624

Sample preparation: Die C
No of samples tested: 5
Pre-test conditioning: 24hrs @ 23±2°C/50±5%RH
Test machine: Instron 1114
Speed of test: 500m/min

Puncture Resistance to ASTM D1000, section 123-128

Sample size: 75 x 25mm
No of samples tested: 5
Pre-test conditioning: 24hrs @ 23±2°C/50±5%RH
Diameter of probe: 3.175mm
Test machine: Instron 1114
Speed of test: 50mm/min

Date of testing: 29/02 – 03/03/2016

Test Results

Tear Resistance of Multi-Laminate Adhesive Tape

Sample	Tear Resistance (N/mm)
1	94.23
2	98.21
3	98.78
4	104.63
5	111.38
Mean	101.45
Std Dev	6.68

Puncture Force of Multi-Laminate Adhesive tape

Sample	Puncture Force (N)
1	241.5
2	217.3
3	231.9
4	222.2
5	238.8
Mean	230.3
Std Dev	10.4

These results relate only to the materials tested

Work carried out and recorded by the following personnel:



Paula Fountain BSc MSc
Laboratory Technician



Richard Wright
Laboratory Technician

Work approved by the following personnel:



L J Komatsu ACQI
Technical Manager

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..... **END**

4WT NO: 3459
JOB NO: 2718
CLIENT REF: PO36001411
CERT NO: C2913 Issue 2

4ward Testing Ltd
5 Hampers Common
Industrial Estate
Petworth
West Sussex
GU28 9NR
United Kingdom

Tel.: +44 (0)1798 342240
+44 (0)1798 344323
Fax: +44 (0)1798 344482

info@4wardtesting.co.uk

www.4wardtesting.co.uk

Certificate of Test for Multi-laminate Tape

Water Vapour Transmission Rate

Supplied by:

Temati (UK) Ltd
Unit 3A, Isabella Court
Millenium Business Park
Mansfield
Nottinghamshire
NG19 7JZ

Certificate prepared by:

Lesley Komatsu

Certificate of Test for Multi-laminate Tape

Water Vapour Transmission Rate

4ward Testing Ltd were contacted by Temati (UK) Ltd of Unit 3A, Isabella Court, Millenium Business Park, Mansfield, Nottinghamshire, NG19 7JZ and asked to carry out testing on a Multi-laminate Tape to the following specification: ASTM E96, Water Vapour Transmission Rate of Materials

Identification

Material: Multi-laminate Tape
Customer Identification: -
Customer Reference: PO36001411
4WT No: 3459
Job No: 2718
Date Received: 01/04/2016

Test Data

Test samples cut from material supplied by customer.

Samples tested to ASTM E96, Procedure B – Water Method
Samples maintained at: 23 +/-2°C, 50+/-5% RH
Date Test Started: 06/04/16
Date Test Terminated: 04/05/16

Test results

Water Vapour Transmission Rate: 0.063g/m²/24hrs

Metric Permeance: 0.00606g/24hr/m²/mmHg

Or: 0.000252g/hr/m²/mmHg

These results relate only to the material tested.

Work recorded and authorised by the following personnel:

.....
L J Komatsu ACQI
Technical Manager

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..... **END**

Technical Report - TR 0531
Page 1 of 6

**Accelerated Weathering Testing of 5-ply Composite Films on an
Adhesive backing in Accordance with ISO 20340 : 2009**

Temati / Foster 62-05 Vapor Fas

Andy Cholerton

Temati Ltd

Unit 3a Isabella Court

Millennium Business Park

Mansfield

NG19 7JZ

Date of Report: May 2017

Job No: AWL 1344

Accelerated Weathering Testing of 5-ply Composite Films on an Adhesive backing in Accordance with ISO 20340 : 2009

Temati / Foster 62-05 Vapor Fas

1.0 Introduction

The Accelerated Weathering Laboratory (AWL) Ltd were contacted by Rob Philips and Andrew Cholterton of Temati UK Ltd with a requirement for accelerated weathering testing of black, silver and white 5-ply composite films on an adhesive backing in accordance with ISO 20340:2009.

6 samples were received on 20/10/2016 at AWL Ltd in good condition and presented to AWL as 6 samples as follows:

- Sample 1 Black 5-ply film encapsulating a PU block approx. 150 x 150 x 25mm
- Sample 2 Silver 5-ply film encapsulating a PU block approx. 150 x 150 x 25mm
- Sample 3 White 5-ply film encapsulating a PU block approx. 150 x 150 x 25mm
- Sample 4 Black 5-ply film encapsulating a test panel approx. 150 x 75 x 1mm
- Sample 5 Silver 5-ply film encapsulating a test panel approx. 150 x 75 x 1mm
- Sample 6 White 5-ply film encapsulating a test panel approx. 150 x 75 x 1mm

The objective of the test was to establish whether the films would deteriorate and/or perforate contaminating the PU insulating material inside.

3.0 Test standard and profile

This international standard state the performance requirements for paint systems for off-shore and related structures (i.e. those exposed to marine atmospheres). ISO 20340 can also be used for other protective systems, provided the systems selected comply with this standard.

ISO 20340 places emphasis on high-durability coatings, films and other barriers, with the aim of minimising maintenance periods so reducing safety considerations and environmental impact.

3.1 ISO 20340 test profile

1. 3 days (72 hours) UV weathering in accordance with ISO 16474-3 : 2013 ** (formally ISO 11507)
2. 3 days (72 hours) salt spray testing in accordance with ISO 9227:2012
3. 1 day (24 hours) low temperature steady state storage at -20°C
4. Repeat 1 to 3 for 25 cycles (4200 hours)

** Method A / Cycle 1

Note: Between the salt spray and low-temperature periods, samples were rinsed with deionized water to remove residual salt solution but not allowed to dry. At the beginning of the low-temperature period samples were loaded into a pre-cooled low temperature chamber to ensure the samples reach -20 ± 2 °C within 30 minutes.

4.0 Table 2 – Gloss retention

Sample ID	Gloss units (GU) @ 60°				
	Average of x3 readings				
	0 hours	1000 hours	2000 hours	3000 hours	4200 hours
1	49.3	48.1	41.6	38.6	36.6
2	85.5	62.2	60.6	58.6	54.4
3	39.2	38.6	35.2	16.6	5.2
4	50.8	49.2	47.7	41.3	37.2
5	87.1	59.2	57.4	53.1	51.9
6	40.6	38.4	36.1	11.2	5.9

6.0 ISO 4628 assessments within the UV exposed area at 25 cycles

Sample ID	ISO 4628-2 Blistering	ISO 4628-3 Rusting	ISO 4628-4 Cracking	ISO 4628-5 Flaking	ISO 4628-6 Chalking	Results
	0 (S0) min	Ri 0 min	0 (S0) min	0 (S0)	To be agreed between interested parties	
1	0 (S0)	Ri 0	0 (S0)	0 (S0)	None	PASS
2	0 (S0)	Ri 0	0 (S0)	0 (S0)	None	PASS
3	0 (S0)	Ri 0	0 (S0)	0 (S0)	None	PASS
4	0 (S0)	Ri 0	0 (S0)	0 (S0)	None	PASS
5	0 (S0)	Ri 0	0 (S0)	0 (S0)	None	PASS
6	0 (S0)	Ri 0	0 (S0)	0 (S0)	None	PASS

5.0 Summary

- Sample 1 and 4 (black) and sample 3 and 6 (white) showed good resistance to perforation, blistering, corrosion, cracking, flaking and chalking after assessment in accordance with parts 2, 3, 4, 5 & 6 of ISO 4628. However, gloss levels had dropped significantly after approx. 2000 hours exposure.
- Samples 2 and 5 (silver) showed unsightly staining after just 1050 hours exposure. This had occurred mainly due to the influence of the salt spray segment of the test profile. Gloss measurement was difficult due to the degree of staining.
- Samples 2 and 5 (silver) also showed low frequency, but moderate sized blistering on the surfaces that were **not exposed** to the UV segment of ISO 20340.

- All samples were returned to the client for examination of the encapsulated PU material as a further assessment regarding perforation.
- At the time of writing this report acceptance criteria in terms of gloss and staining were not known. The PASS statements in part 6 refers to the ISO 4628 assessment requirements of ISO 20340. Caution should be given to samples 2 and 5 due to micro-blistering and staining but no perforation of the film was evident after the exposure period.

The following photographs show the appearance of the samples after 4200 hours exposure / 25 cycles of the ISO 20340 test profile (Figs 1 to 3). An additional photograph has been included showing the extent of staining on the silver film at 19 of 25 cycles (Fig 4).

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Fig 1
Sample 1 and 4 – Black. Some gloss reduction at 25 cycles



Fig 2
Samples 2 and 5 – Silver – Staining area not associated with the UV exposure zone (arrowed)



Fig 3

Samples 3 and 6 – White. Showing gloss reduction and some staining from the sample holder.



Fig 4

Samples 2 and 5 showing the extent of staining at 19 of 25 cycles

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