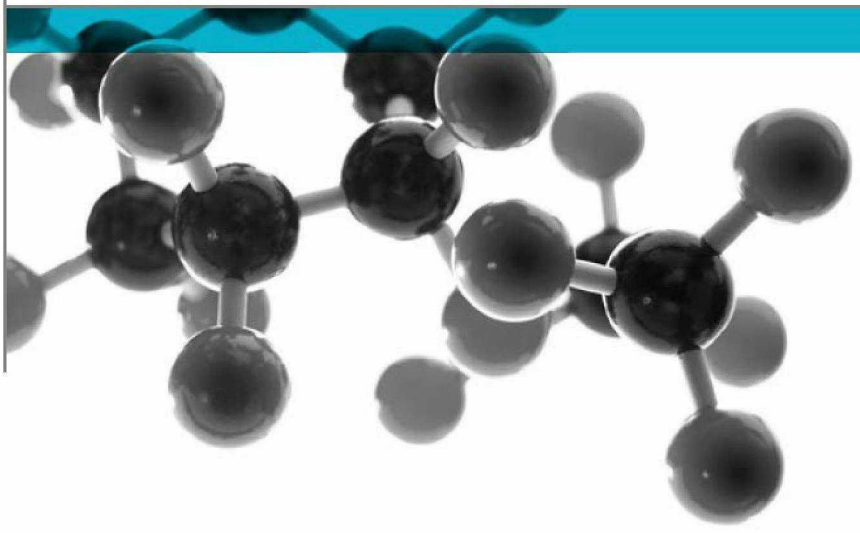
Exova Warringtonfire
Holmesfield Road
Warrington
WA1 2DS
United Kingdom

T : [redacted]
F :
E : warrington@exova.com
W: www.exova.com

BS EN ISO 11925-2: 2010



Ignitability Of Building Products Subjected To Direct Impingement Of Flame
Part 2: Single Flame Source Test

A Report To: Kingspan Insulation Ltd

Document Reference: 379563

Date: 2nd March 2017

Issue No.: 1

Testing
Advising
Assuring

UKAS TESTING
0249

Executive Summary

Objective To determine the performance of the following product when tested in accordance with BS EN ISO 11925-2:2010.

Generic Description	Product reference	Thickness	Weight per unit area or density
Reinforced foil faced and backed foam insulation product	"Kooltherm K15"	25mm	1.22kg/m²
Individual components used to manufacture composite:			
Foil (printed)	"Scrim Composite Foil-Perforated"	0.38mm	171g/m²
Scrim reinforcement	Not stated	Not stated	Not stated
Foam insulation	"K15"	25mm	40kg/m³
Scrim reinforcement	Not stated	Not stated	Not stated
Foil (non printed)	"Scrim Composite Foil-Perforated"	0.38mm	171g/m²
Please see page 5 and 6 of this test report for the full description of the product tested			

Test Sponsor Kingspan Insulation Ltd, Torvale Industrial Estate, Pembridge, Leominster HR6 9LA, United Kingdom

Test Results:

On the set of six specimens which were subject to surface application, the maximum flame height reached was observed to be 60 ± 0.9mm.

On the set of six specimens which were subject to edge application, the maximum flame height reached was observed to be 40 ± 0.9mm

On the set of six specimens which were turned around at 90° with foam edge exposed, the maximum flame height reached was observed to be 50 ± 0.9mm

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Date of Test 14th February 2017

Signatories

K Hughes	S M Deeming
Responsible Officer K. Hughes * Technical Officer	Authorised S. Deeming* Business Unit Head

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

Report Issued: 2nd March 2017

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Test Details

Purpose of test

To determine the performance of specimens of a product when they are subjected to the conditions of the test specified in BS EN ISO 11925-2:2010 "Reaction to Fire tests - Ignitability Of Building Products Subjected to Direct Impingement of Flame – Part 2: Single Flame Source Test".

The test was performed in accordance with the procedure specified in BS EN ISO 11925-2:2010 Reaction to Fire Tests - Ignitability of Building Products subjected to direct impingement of flame – Part 2: Single Flame Source Test, and this report should be read in conjunction with that BS EN ISO Standard.

Scope of test

BS EN ISO 11925-2 specifies a method of test for determining the ignitability of building products by direct small flame impingement under zero impressed irradiance using specimens tested in a vertical orientation.

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 has 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 14th February 2017 at the request of Kingspan Insulation Ltd,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

The specimens were received on the 6th February 2017.

Prior to test the specimens were stored for 4 days in a standard atmosphere as defined in BS EN 13238:2010 Conditioning Procedures and General Rules for selection of substrates until constant mass was achieved.

Intended application

Thermal insulation.

Substrate

The specimens were tested with a calcium silicate substrate.

Flame application time

The flame was applied for 30 seconds.

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		Reinforced foil faced and backed foam insulation product
Product reference		"Kooltherm K15"
Batch No		"8100224619.1000"
Name of manufacturer		Kingspan Insulation Ltd.
Thickness		25mm (stated by sponsor) 25.7mm (determined by **Exova Warringtonfire**)
Weight per unit area		1.22kg/m² (stated by sponsor) 1.98 kg/m² (determined by **Exova Warringtonfire**)
Foil	Generic type	Aluminium
	Product reference	"Scrim Composite Foil-Perforated"
	Detailed description / composition details	Lamtec 25 micron printed, perforated, composite foil ref: "10131"
	Name of manufacturer	Lamtec
	Thickness	0.38mm
	Weight per unit area	171g/m²
	Colour reference	"Silver With Kingspan Logo"
	Flame retardant details	**See Note 1 below**
Scrim reinforcement	Generic type	**See Note 2 below**
	Product reference	**See Note 2 below**
	Name of manufacturer	**See Note 3 below**
	Colour reference	"Silver"
	Thickness	**See Note 2 below**
	Density / weight per unit area	**See Note 2 below**
	Type of weave / cell dimensions	Bi directional scrim
	Flame retardant details	**See Note 1 below**

Continued on next page

Bonding details		Auto adhesively bonded during the manufacturing process
Foam insulation	Generic type	Phenolic
	Product reference	"K15"
	Detailed description / composition details	Factory made closed cell phenolic foam
	Name of manufacturer	Kingspan Insulation Ltd.
	Thickness	25mm
	Density	40kg/m³
	Colour reference	"Pinkish"
	Flame retardant details	**See Note 1 below**
Bonding details		Auto adhesively bonded during the manufacturing process
Scrim reinforcement	Generic type	**See Note 2 below**
	Product reference	**See Note 2 below**
	Name of manufacturer	**See Note 3 below**
	Colour reference	"Silver"
	Thickness	**See Note 2 below**
	Density / weight per unit area	**See Note 2 below**
	Type of weave / cell dimensions	Bi directional scrim
	Flame retardant details	**See Note 1 below**
Foil	Generic type	Aluminium
	Product reference	"Scrim Based Composite Foil Perforated"
	Detailed description / composition details	1-1963 Lamtec 25micron foil face. No print. perforated
	Name of manufacturer	Lamtec
	Thickness	0.38mm
	Weight per unit area	171g/m²
	Colour reference	"Silver Foil"
	Flame retardant details	**See Note 1 below**
Substrate	Product reference	"Promat – Brandschultzbauplatten; Promatect-H"
	Generic type	Calcium Silicate based board
	Name of manufacturer	Promat
	Thickness	12mm
	Density	870kg/m³
	Flame retardant details	The substrate is inherently flame retardant
Brief description of manufacturing process		Facing is auto adhesively bonded to foam during the manufacturing process.

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.

Note 3: The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

Test Results

Number of specimens tested

Six specimens were tested, each of which were subjected to surface exposure to flame with the printed foil face exposed.

Six specimens were tested, each of which were subjected to edge exposure to flame with the printed foil face exposed.

Six specimens were tested, each of which were subjected to edge exposure to flame with the specimen turned at 90° round its vertical axis and the foam face exposed.

Applicability of test results

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

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.

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 Tables 1, 2 and 3.

On the set of six specimens which were subject to surface application, the maximum flame height reached was observed to be 60 ± 0.9mm.

On the set of six specimens which were subject to edge application, the maximum flame height reached was observed to be 40 ± 0.9mm

On the set of six specimens which were turned around at 90° with foam edge exposed, the maximum flame height reached was observed to be 50 ± 0.9mm

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

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.

Table 1

Test Flame Application Position - Surface of printed foil face

Specimen No.	Ignition Yes/No	Time from start of test for flame tip to reach 150mm (seconds)	Extent of Flame Spread (mm)	Flaming Debris	Glowing	Extent of Damaged Area (mm)	
						Height	Width
1	No	Did not reach	Nil	None	None	80	20
2	Yes	Did not reach	60	None	None	90	17
3	Yes	Did not reach	40	None	None	70	19
4	Yes	Did not reach	40	None	None	75	17
5	Yes	Did not reach	50	None	None	105	19
6	Yes	Did not reach	60	None	None	90	14

Table 2

Test Flame Application Position - Edge of printed foil face

Specimen No.	Ignition Yes/No	Time from start of test for flame tip to reach 150mm (seconds)	Extent of Flame Spread (mm)	Flaming Debris	Glowing	Extent of Damaged Area (mm)	
						Height	Width
1	Yes	Did not reach	40	None	None	20	32
2	Yes	Did not reach	30	None	None	20	35
3	Yes	Did not reach	30	None	None	20	45
4	Yes	Did not reach	30	None	None	27	35
5	Yes	Did not reach	30	None	None	17	35
6	Yes	Did not reach	30	None	None	27	40

Table 3

Test Flame Application Position - Edge Of The Specimen Turned At 90° Round Its Vertical Axis And The Insulation Face Exposed.

Specimen No.	Ignition Yes/No	Time from start of test for flame tip to reach 150mm (seconds)	Extent of Flame Spread (mm)	Flaming Debris	Glowing	Extent of Damaged Area (mm)	
						Height	Width
1	Yes	Did not reach	50	None	None	85	21
2	Yes	Did not reach	50	None	None	80	19
3	Yes	Did not reach	45	None	None	95	20
4	Yes	Did not reach	50	None	None	110	18
5	Yes	Did not reach	45	None	None	97	23
6	Yes	Did not reach	50	None	None	99	16

Revision History

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Revised By:	Approved By:
Reason for Revision:	

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