

BRE Global Test Report

EN ISO 11925-2: 2010 Single-flame source test on 140 mm-thick K15

Prepared for: Kingspan Insulation Limited

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1 Objective

To assess the performance of the sample described in Section 2 of this report when subjected to the tests specified in EN ISO 11925-2¹.

2 Sample

2.1 Traceability

The test samples were supplied by the test sponsor. BRE Global was not involved in the sample selection process and therefore cannot comment upon the relationship between the samples supplied for test and the product supplied to market.

2.2 Description of sample and test format

Unless otherwise stated all measurements are nominal.

Parameter	Details
Test sponsor	Kingspan Insulation Limited Pembridge Leominster Herefordshire HR6 9LA UK
Manufacturer of sample	Kingspan Insulation Limited - Head Quarters Torvale Industrial Estate Pembridge Leominster Herefordshire HR6 9LA UK
Place of manufacture	Kingspan Insulation Limited Bree Industrial Estate Castleblayney Co. Monaghan Ireland
Trade name	K15
Sample reference	8100143237 1002
Sample description (as provided by test sponsor/manufacturer)	Foil faced phenolic insulation board
Description of sample (as received)	140 mm-thick pinkish-orange rigid foam with perforated foil facings. Both facers appeared identical. The interior face was marked with the blue Kingspan logo.
Test sponsor's product data	
Generic type of product	Closed cell phenolic – foil faced.



Parameter	Details
Nominal thickness (mm)	140 mm
Nominal density (kg/m ³)	35 kg/m ³
Nominal mass per unit area (kg/m ²)	Note 2
Colour	Foil: Silver Glass fibre: Light brown/off-white Insulation: Pink/orange
Flame retardant treatment added or organic content limited during production	No
European product standard, if applicable	EN 13166 ²
Substrate and ventilation conditions	
Substrate	None
Type of air gap	Ventilated or free-standing
Measured sample data	
Mean sample density	40.73 kg/m ³
Mean sample thickness	139.89 mm
Mean sample mass per unit area	5.70 kg/m ²
Test information	
Face to be tested	Foil face
Orientation aspects	Note 1
Test sponsor's sampling identification	Batch No. 8100143237-1002. D.O.M 02.12.2015
BRE Global sample number	E8153
Sample receipt date	30 June 2015
Date into conditioning	30 June 2015
Date of test	10 August 2015
Additional information:	None

Note 1: This information was not supplied by the test sponsor.

Note 2: Note 1: This commercially sensitive information has been withdrawn from the test report at the request of the test sponsor. The information is held in confidence in the laboratory file.



2.3 Test summary

There were no joints incorporated into the test specimens.

The following tests were conducted:

Set	Sample	Exposure condition	Flame application period (s)	Substrate / fixing	Facing
1	140 mm K15	Surface	30	None	None
2	140 mm K15	Edge	30	None	None
3	140 mm K15	Edge 90° to face	30	None	None

2.4 Description of substrate and fixing

Not applicable.

2.5 Mounting technique

Each test specimen was mounted free-standing, without any material either in front or behind it.

3 Conditioning

The specimens were conditioned as required by the standard.

4 Results

4.1 Ignition and flame spread data

Table 1: Set 1 K15 Surface exposure

Temperature: 22.6 °C Relative humidity: 69.7 % Air velocity: 0.68 m/s
 Exposure condition: Surface Flame application time: 30 s Operator: C Rock
 Number of test runs: Six Deviations from test standard: None

Run No.	Occurrence of ignition (Y/N)	Time to ignition (s)	Duration of flaming (s)*	Flame spread to 150 mm (Y/N)	Time to reach 150 mm (s)	Maximum flame spread (mm)	Ignition of filter paper (Y/N)
1L	No	N/A	N/A	No	N/A	N/A	No
2L	No	N/A	N/A	No	N/A	N/A	No
3L	No	N/A	N/A	No	N/A	N/A	No
4C	No	N/A	N/A	No	N/A	N/A	No
5C	No	N/A	N/A	No	N/A	N/A	No
6C	Yes	27	3	No	N/A	46	No

N/A Not applicable

* Measured to end of the 60 s test duration

L Lengthwise

C Crosswise

**Table 2: Set 2 K15 Edge exposure**

Temperature: 22.6 °C

Relative humidity: 68.8 %

Air velocity: 0.68 m/s

Exposure condition: Edge

Flame application time: 30 s

Operator: C Rock

Number of test runs: Six

Deviations from test standard: None

Run No.	Occurrence of ignition (Y/N)	Time to ignition (s)	Duration of flaming (s)*	Flame spread to 150 mm (Y/N)	Time to reach 150 mm (s)	Maximum flame spread (mm)	Ignition of filter paper (Y/N)
1L	Yes	9	19	No	N/A	43	No
2L	Yes	8	22	No	N/A	30	No
3L	Yes	6	24	No	N/A	45	No
4C	Yes	6	24	No	N/A	42	No
5C	Yes	8	22	No	N/A	40	No
6C	Yes	9	21	No	N/A	30	No

N/A Not applicable

* Measured to end of the 60 s test duration

L Lengthwise

C Crosswise

Table 3: Set 3 K15 Edge 90° to the surface exposure

Temperature: 22.1 °C

Relative humidity: 69.7 %

Air velocity: 0.68 m/s

Exposure condition: Edge 90° to face

Flame application time: 30 s

Operator: C Rock

Number of test runs: Eight

Deviations from test standard: None

Run No.	Occurrence of ignition (Y/N)	Time to ignition (s)	Duration of flaming (s)*	Flame spread to 150 mm (Y/N)	Time to reach 150 mm (s)	Max. flame spread [damage height] (mm)	Ignition of filter paper (Y/N)
1LF	Yes	1	29	No	N/A	20 [96]	No
2CF	Yes	1	29	No	N/A	20 [92]	No
3LI	Yes	1	19	No	N/A	48 [107]	No
4CI	Yes	1	29	No	N/A	45 [100]	No
5LI	Yes	1	29	No	N/A	45 [113]	No
6LI	Yes	1	29	No	N/A	40 [117]	No
7CI	Yes	1	29	No	N/A	45 [128]	No
8CI	Yes	1	29	No	N/A	55 [115]	No

N/A Not applicable

* Measured to end of the 60 s test duration

L Lengthwise

C Crosswise

F Foil face

I Insulation



4.2 Observations

Set(s)	Run No.	Comments
1	1 - 5	The pigment on the foil facer discoloured in the flame impingement area. Some intumescence was observed in the same region. The insulation beneath the foil facer was charred and discoloured.
	6	This performed in a similar way to the previous test runs with the exception that a jet of flame was observed on the surface of the test specimen for a short duration. This was located directly over a perforation in the foil facer.
2	All	The insulation beneath the foil facer was charred and discoloured within the flame impingement area.
3	All	Two test runs were conducted on the foil component. In these test runs, the maximum flame height was 20 mm and the damaged area was approximately 10 mm-wide; most of the flaming occurred on the adjacent phenolic foam insulation.
		Six test runs were conducted on the insulation component. The damaged area was approximately 25 mm-wide and the flame spread between 40 mm and 55 mm, it was therefore concluded that the insulation was the worst performing element.

5 Conclusion

EN ISO 11925-2: 2010 does not contain acceptance criteria and therefore this test report does not indicate a pass or fail of the product.

6 Validity

These test results relate to the behaviour of the sample in the form in which it was tested; the results do not necessarily relate to products produced as a result of further processing or refinement of the sample under test.

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

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 5 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.



7 References

- 1 EN ISO 11925-2: 2010. Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test. CEN, Avenue Marnix 17, B-1000 Brussels. 2010.
- 2 EN 13166: 2012. Thermal insulation products for buildings – Factory made phenolic foam (PF) products – Specification. CEN, Avenue Marnix 17, B-1000 Brussels. 2012.



Table A.1: Test sponsor's product description

Company: Kingspan Insulation Ltd	
Parameter	Details (if applicable)
Trade name	K15
General description	Foil faced Phenolic Insulation board
Name and address of manufacturer of product	Kingspan Insulation Ltd HQ Torvale In est
Place of manufacture	1002 – Kingspan Ireland-Castleblayney Ireland.
Product reference/number	8100143237 1002
Thickness	140 mm
Density	35 kg/m ³ specified by Kingspan
Mass per unit area	Note 1
Generic type of product	Closed cell Phenolic
Flame retardant treatment added or organic content limited during production (yes/no), if yes give details	NO
European product standard, if applicable	BS EN 13166
Industry/in-house product standard, if applicable	ThIB
Attestation of conformity systems, if applicable	Note 2
Interior facing 1 (test face) <ul style="list-style-type: none"> - Generic type - Product reference - Manufacturer - Thickness - Mass per unit area/ density - Colour reference - Trade name flame retardant - Generic type flame retardant - Amount flame retardant 	Composite perforated foil face bi-directional scrim with a fibreglass mat Note 1 Note 1 Note 1 Note 1 Silver Foil No flame retardant N/A N/A
Interior facing 2 <ul style="list-style-type: none"> - Generic type - Product reference - Manufacturer - Thickness - Mass per unit area/ density - Colour reference - Trade name flame retardant - Generic type flame retardant - Amount flame retardant 	N/A



Company: Kingspan Insulation Ltd	
Parameter	Details (if applicable)
Core material <ul style="list-style-type: none"> - Generic type - Product reference - Manufacturer - Thickness - Mass per unit area/density - Colour reference - Trade name flame retardant - Generic type flame retardant - Amount flame retardant 	Closed cell Phenolic Kooltherm Kingspan Insulation Ltd 140 mm, total-facing 139.95 mm 35 kg/m ³ Pinkish/salmon No flame retardant N/A N/A
Exterior facing 2 <ul style="list-style-type: none"> - Generic type - Product reference - Manufacturer - Thickness - Mass per unit area/density - Colour reference - Trade name flame retardant - Generic type flame retardant - Amount flame retardant 	Same as above (Interior Facing 2)
Exterior facing 1 <ul style="list-style-type: none"> - Generic type - Product reference - Manufacturer - Thickness - Mass per unit area/density - Colour reference - Trade name flame retardant - Generic type flame retardant - Amount flame retardant 	Same as above (Interior facing 1)-product has the same facing on either side.
Adhesive (if applicable) <ul style="list-style-type: none"> - Generic type - Product reference - Manufacturer - Application rate - Application method - Specific gravity - Colour reference - Trade name flame retardant - Generic type flame retardant - Amount flame retardant 	Note 2
Substrate (if applicable) <ul style="list-style-type: none"> - Generic type - Product standard - Product name/reference - Manufacturer - Thickness - Density or mass per unit area - Class (EN 13501-1) 	Note 2
Face to be tested	Note 2
Orientation aspects	Note 2



Company: Kingspan Insulation Ltd	
Parameter	Details (if applicable)
Sampling Identification Reference	Batch number 8100143237-1002 date of manufacture 02.012.2014
Additional information:	Note 1

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Note 2: This information was not supplied by the test sponsor.

N/A: Not applicable.