

Exova Warringtonfire  
Holmesfield Road  
Warrington  
WA1 2DS  
United Kingdom

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



Testing. Advising. Assuring.

**Title:**

EXTENDED APPLICATION  
REPORT IN ACCORDANCE  
WITH EN/TS 15117:2005

**Notified Body No:**

0833

**Product Name:**

"Kooltherm K15"

**Report No:**

WF 364936

**Issue No:**

1

**Prepared for:**

Joint Sponsors

**Kingspan Insulation  
Limited**

Pembridge, Leominster  
Herefordshire, HR6 9LA

And

**Kingspan Insulation  
Limited**

Bree Industrial Estate,  
Castleblayney, Co. Monaghan  
Ireland

**Date:**

13<sup>th</sup> May 2016

## 1. Introduction

This report extends the field of application of test results obtained for "Kooltherm K15", a family of foil-faced thermoset phenolic insulation boards. Extended application enables the prediction of fire performance, on the basis of one or more test results to the same test standards and enables the classification of product ranges and product families.

## 2. Details of Product Family

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

The product family for which extended application is to be used is "Kooltherm K15", a family of foil-faced thermoset phenolic insulation boards. There is one product property which varies within this product family; insulation thickness. This property was assessed to determine its influence on the fire performance of the product when tested in accordance with EN 13823 and EN ISO 11925-2, and classified in accordance with EN 13501-1.

### 2.1 Product description

The product family, "Kooltherm K15", a family of foil-faced thermoset phenolic insulation boards, is fully described below and in the test reports provided in support of classification listed in Clause 3.1.

|                       |                         |   |
|-----------------------|-------------------------|---|
| General description   |                         | Foil-faced thermoset phenolic insulation board  |
| Name of manufacturer  |                         | Kingspan Insulation Ltd.  |
| Trade names           |                         | "Kooltherm K15"   |
| Thickness             |                         | 50mm to 140mm   |
| Weight per unit area  |                         | 2.09kg/m <sup>2</sup> to 5.70kg/m <sup>2</sup>  |
| Product configuration |                         | <ul style="list-style-type: none"> <li>• Foil facer</li> <li>• Phenolic foam</li> <li>• Foil facer</li> </ul> |
| Aluminium foil        | Product reference       | <b>See Note 1 below</b>   |
|                       | Generic type            | Composite foil  |
|                       | Name of manufacturer    | <b>See Note 1 below</b>   |
|                       | Weight per unit area    | <b>See Note 1 below</b>   |
|                       | Thickness               | <b>See Note 1 below</b>   |
|                       | Colour                  | "Silver Foil"   |
|                       | Flame retardant details | <b>See Note 2 below</b>   |
| Foam                  | Product references      | "K15"   |
|                       | Generic type            | Phenolic foam   |
|                       | Name of manufacturer    | Kingspan Insulation Ltd.  |
|                       | Thickness               | 50mm to 140mm   |
|                       | Density                 | 35kg/m <sup>3</sup> ±15%  |
|                       | Colour reference        | "Pink"  |
|                       | Flame retardant details | <b>See Note 2 below</b>   |

Continued on next page

|  |   |  |
|--|---|--|
| Substrate                                  | Product reference   | "Promat – Brandschultzbauplatten; Promatect-H" |
|  | Generic type  | Calcium Silicate based board                   |
|  | Name of manufacturer  | Promat   |
|  | Thickness   | 12mm   |
|  | Density   | 870kg/m <sup>3</sup>                           |
|  | Flame retardant details   | The substrate is inherently flame retardant    |
| Mounting and fixing details                | As per end use application: reisser countersunk screws 6x150mm with 70x70mm SFS 'Isofast' ID 70 plate washers. Edge fixings sited more than 50mm and not less than 150mm from board edges with no overlap of board joints. Fixings applied at overall rate of 9.44 per m <sup>2</sup> . |  |
| Joint Details                              | Long wing: one horizontal at 500mm of specimen height, vertical 200mm in from corner line - Short wing one horizontal joint at 500mm height. As per EN 13823 5.2.2  |  |
| Brief description of manufacturing process | Facings auto adhesively bonded to phenolic foam during the manufacturing process. Foam boards are made at 70°C under pressure   |  |

Note 1: The sponsor of the test has provided this information but at the specific request of the sponsor, these details have been omitted from the report and are instead held on the confidential file relating to this investigation.

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

### 3. Test reports, classification reports & test results in support of classification

#### 3.1 Test reports, classification reports

| Name of Laboratory   | Name of sponsor             | Test reports/extended application report Nos. | Test method / extended application rules & date |
|----------------------|-----------------------------|---|---|
| Exova Warringtonfire | Kingspan Insulation Limited | WF 329591                                     | EN ISO 11925-2                                  |
| Exova Warringtonfire | Kingspan Insulation Limited | WF 329583                                     | EN 13823  |
| Exova Warringtonfire | Kingspan Insulation Limited | WF 349131, WF 364937                          | EN 13501  |
| BRE Global           | Kingspan Insulation Limited | P100160-1000-1                                | EN ISO 11925-2                                  |
| BRE Global           | Kingspan Insulation Limited | P100160-1000-3                                | EN 13823  |
| BRE Global           | Kingspan Insulation Limited | P100160-1000-4                                | EN 13501  |

#### 3.2 Test results

| Test method & test number                                 | Parameter                   | No. tests         | Results                         |                       |
|---|-----------------------------|-------------------|---------------------------------|-----------------------|
|   |                             |                   | Continuous parameter - mean (m) | Compliance parameters |
| EN ISO 11925-2 (30s exposure - surface)                   | F <sub>s</sub>              | 6, WF 329591      | 33.3, 7.67                      | Compliant             |
|   | Flaming droplets/ particles | 6, P100160-1000-1 | None, None                      | Compliant             |
| EN ISO 11925-2 (30s exposure - edge)                      | F <sub>s</sub>              | 6, WF 329591      | 30, 38.3                        | Compliant             |
|   | Flaming droplets/ particles | 6, P100160-1000-1 | None, None                      | Compliant             |
| EN ISO 11925-2 (30s exposure - edge turned at 90 degrees) | F <sub>s</sub>              | 6, WF 329591      | 10, 39.75                       | Compliant             |
|   | Flaming droplets/ particles | 8, P100160-1000-1 | None, None                      | Compliant             |
| EN 13823  | FIGRA <sub>0.2MJ</sub>      | 3, WF 329583      | 393.25                          | Compliant             |
|   |                             | 3, P100160-1000-3 | 318.3                           |                       |
|   | FIGRA <sub>0.4MJ</sub>      | 3, WF 329583      | 231.76                          | Compliant             |
|   |                             | 3, P100160-1000-3 | 220.0                           |                       |
|   | THR <sub>600s</sub>         | 3, WF 329583      | 3.72                            | Compliant             |
|   |                             | 3, P100160-1000-3 | 3.4                             |                       |
|   | LFS                         | 3, WF 329583      | None                            | Compliant             |
|   |                             | 3, P100160-1000-3 | None                            |                       |
|   | SMOGRA                      | 3, WF 329583      | 0.00                            | Compliant             |
|   |                             | 3, P100160-1000-3 | 0.9                             |                       |
|   | TSP <sub>600s</sub>         | 3, WF 329583      | 25.06                           | Compliant             |
|   |                             | 3, P100160-1000-3 | 33.9                            |                       |

## **4. Classification and field of application**

### **4.1 Definition of Limits of Extended Application**

Two formal tests were conducted in accordance with EN 13823 and two in accordance with EN ISO 11925-2. The product with the maximum insulation and overall thickness was tested and is covered by test reports "P100160-1000-1" and "P100160-1000-3" and classification report "P100160-1000-4". In addition, the product with the minimum insulation and overall thickness was tested and is covered by test reports "WF 329591" and "WF 329583" and classification report "WF 349131".

### **4.2 EN ISO 11925-2**

Both the minimum and maximum thicknesses of product were tested formally in accordance with EN ISO 11925-2 using surface, edge and edge at 90 degrees flame applications, no flame spread from the point of flame application travelled further than 55mm. The highest average flame front was over 70% below the maximum value allowed for Class C, (EN 13501-1).

### **4.3 EN 13823**

The SBI test measures the following fire parameters, Fire Growth Rate (FIGRA), Total Heat Release (THR600s), Smoke Growth Rate (SMOGRA) and Total Smoke Production (TSP600s).

These parameters were evaluated to assess what influence product colour/pattern has on the fire performance of "Kooltherm K15", a family of foil-faced thermoset phenolic insulation boards. This evidence is shown in Figures 1 and 2.

The highest FIGRA value was at least 7% below the maximum value allowed for Class C, (EN 13501-1). The highest THR600s value was at least 75% below the maximum value allowed for Class C, (EN 13501-1).

The measured results relating to smoke parameters, SMOGRA and TSP600s, also fall within the s1 criteria, with the highest smoke value being approximately 30% below the maximum allowed for s1, (EN 13501-1).

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

### **4.4 Reference of classification**

This classification has been carried out in accordance with EN 13501-1:2007+A1: 2009, and EN/TS 15117 and EN 15715: 2009.

#### 4.5 Classification

The products, "Kooltherm K15", a family of foil-faced thermoset phenolic insulation boards, in relation to their reaction to fire behaviour are classified:

**C**

The additional classification in relation to smoke production is:

**s1**

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

**d0**

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

| Fire Behaviour |   | Smoke Production |          |   | Flaming Droplets |          |
|----------------|---|------------------|----------|---|------------------|----------|
| <b>C</b>       | - | <b>s</b>         | <b>1</b> | , | <b>d</b>         | <b>0</b> |

i.e. **C – s1 , d0**

**Reaction to fire classification: C – s1, d0**

#### 4.6 Extended Field of application

This classification is valid for the following end use applications:

- i) Construction applications mechanically fixed over any substrate with a density equal to or greater than 870kg/m<sup>3</sup>, having a minimum thickness of 12mm and a fire performance of A2 or better (excluding paper faced gypsum plasterboard).

This classification is also valid for the following product parameters:

|                      |  |
|----------------------|--|
| Insulation thickness | 50mm to 140mm  |
| Insulation density   | 35kg/m <sup>3</sup> ± 15%  |
| Product composition  | No variation allowed   |
| Facings              | For the tested thickness only. The test result obtained for Euroclass A1 and A2 facings will also be valid for thicker facings of the same type. |

5. Limitations

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

**SIGNED**



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**Matthew Dale**

Senior Certification Engineer  
Technical Department

**APPROVED**



.....

**Frans Paap**

Certification Engineer  
Technical Department  
on behalf of **Exova Warringtonfire**

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

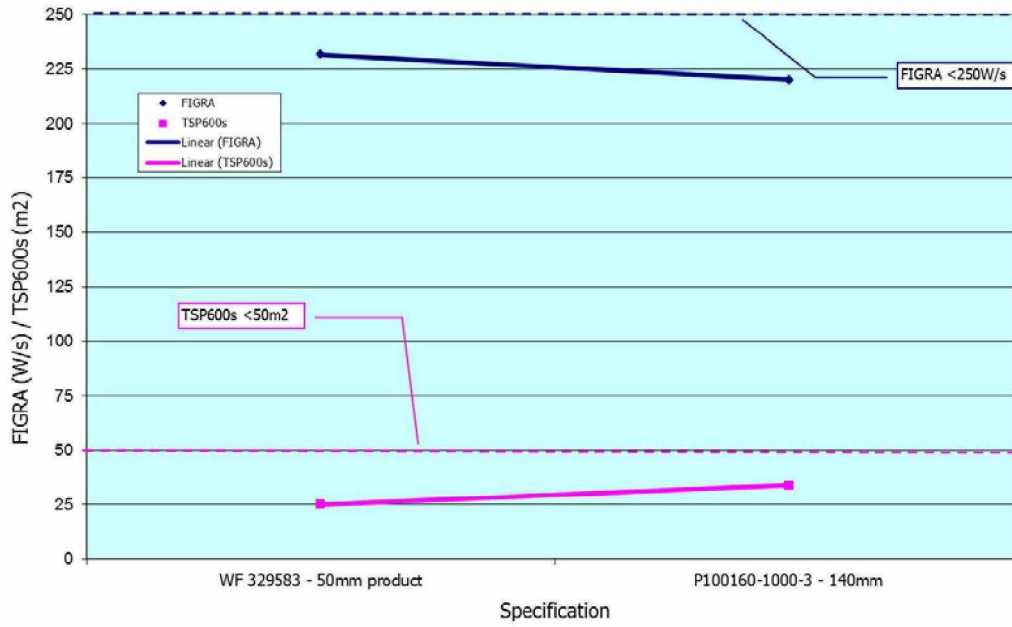


Figure 2 - Effect of varying the product specification on THR600s and SMOGRA

