

23<sup>rd</sup> October 2020

Dear ,

We are writing to you with reference to a number of BS 8414 test reports and corresponding classification reports featuring our product Kooltherm K15 ("K15"), which Kingspan will formally be withdrawing from circulation.

As you may be aware, Kingspan is currently involved as a core participant in the Grenfell Tower Public Inquiry. As part of our co-operation with requests for information from the Inquiry we have undertaken a comprehensive review of all past and current test data which relates to K15, including BS 8414 tests.

Through our review we have now concluded that tests carried out in 2005 and 2014 featured product that was not sufficiently representative of the product currently sold into the market place. We have listed these reports and a small summary of their construction build ups below.

Report Numbers	Tested Construction	Result
Test Report No 220876 carried out in 2005 to BS 8414-1 with Classification Report No P101812-1000	Masonry Substrate, 60mm K15 mechanically fixed, aluminium support grid, 40mm Cavity, 6mm UAC cement particle boards, cavity barriers 0.6mm thick perforate steel with bonded graphite intumescent strip.	BR 135 Compliant
Test Report No 293940 carried out in 2014 to BS 8414-2	Double layer 12.5mm plasterboard, 150mm steel frame, 15mm Cement Sheathing, Aluminium support grid, 85mm K15, 15mm Trespa Fr, Lamatherm Cavity barriers	Early termination due to flame spread above the rig
Test Report No 297099 carried out in 2014 to BS 8414-2 with Classification Report No 291642	Double layer 12.5mm plasterboard, 150mm steel frame, 12mm Cement Sheathing, Aluminium support grid, 80mm K15, 30mm Terracotta Tiles, Lamatherm Cavity barriers	BR 135 Compliant

These reports have been removed for download from the Kingspan website. They have also been removed from product literature and are in the process of being removed from certification.

As further explained below, in relation to each test, Kingspan has either undertaken further testing designed to replicate each system test using K15 as sold on the market or it already has additional test evidence of similar systems using K15 as sold on the market. We believe the information detailed below provides assurance that the withdrawn tests have suitable replacement testing fully representative of systems containing the actual product.

### **Test Report 220876 dated 8<sup>th</sup> December 2005**

Due to the age of this test, a lot of details and information were hard to come by. The drawings used in the test report are limited in detail, and the test report description of the tested construction also offers little information on the full design of the test construction.

On a full review of raw materials and the manufacturing processes, it became apparent that the K15 manufactured in 2005 would not be representative of the product currently sold on the market from 2006 to today. While both products are still phenolic foams, Kingspan is now of the view that there are sufficient differences to consider withdrawing this test report.

As such, we decided to carry out a replacement BS 8414 test featuring an updated assembly more in line with our current testing procedure and using K15 as sold on the market today.

During the design of a replacement test, we investigated the other materials used in the original 2005 test, predominantly the external cladding layer and the cavity barriers. We confirmed with UAC who made the cladding board, which is described as cement particle board that they do not manufacture cement particle boards, but instead non-combustible fibre cement boards. We then looked for a suitable fibre cement cladding and selected the Marley Eternit product as this appeared the most prominent in the UK market place. The cavity barriers used in the test were no longer available in the UK market as they don't meet the minimum provision for a cavity barrier as defined in Approved Document B. As such we switched this element to a Siderise specification as it is an industry leading product and one we had used in previous tests. The cavity barrier layout and cladding arrangement mirrors the DCLG test programme, and other recent tests carried out by Kingspan.

The test was carried out on 6<sup>th</sup> June 2019 at BRE and the report was issued on 7<sup>th</sup> February 2020. Test Report No P114679-1000 and its corresponding Classification Report P114679-1001 can be supplied directly if required and are also available to download from the Kingspan website. This test met the BR 135 performance criteria.

### **Test Report No 293940 dated 26<sup>th</sup> June 2014**

Following our investigations on this test report, there were a couple of areas that needed addressing. Firstly, our findings indicate that the insulation used in this test was not representative of K15 as currently available in the marketplace. The product was still a phenolic foam insulation however we believe the board utilised the HFO blowing agent used in our K100 range, and the facer was 50 micron and unperforated. The standard K15 product utilises a 25 micron perforated facer. This test did not satisfy the BR 135 criteria but we are aware it has been used as supporting evidence as part of desktop studies or fire safety engineered solutions.

The test report itself contains what we think are some inaccuracies. The report measures the insulation layer at 85mm. This is a non-standard thickness and we expect the actual insulation to have been 80mm thick. Furthermore, the cladding is described as 15mm Trespa. This is quite vague and could lead people to assume a standard grade HPL was tested. The invoice for the product ordered shows a 13mm Trespa FR was ordered for this testing.

We ordered two replacement BS 8414 tests to examine current K15 in this test arrangement. The first was conducted at BRE on 24<sup>th</sup> July 2019 (report pending) and featured a build up as close as possible to the construction tested in 2014. This included using a 13mm Trespa FR panel in red, and Siderise cavity barriers (previously Lamatherm). This test was terminated early and the test report is awaited. Once we receive the final version of the report No P114901-1000 this will be uploaded to the Kingspan website.

A second test was conducted at Element's facility in Dubai which was constructed closely to resemble the MHCLG HPL with mineral fibre test arrangement, except using Kooltherm K15. The test was carried out on the 4<sup>th</sup> November 2019 and was also terminated early due to flame spread over the top of the test apparatus. Report Number DLR can be supplied directly if required and is also available on the Kingspan website.

In both tests both the external cladding panel and insulation layer were significantly damaged and flames spread over the surface of the cladding above the top of the rig. As both the 2014 test and the two 2019 tests have failed to meet the BR 135 performance criteria, there is still no successful test that we are aware of featuring a combination of Kooltherm K15 and an FR grade HPL product.

### **Test Report 297099 dated 14<sup>th</sup> April 2014**

Following our investigations into all testing for Kooltherm K15, we found indications that the product used in this test was not representative of Kooltherm K15 as currently available in the marketplace.

We believe the tested product to have a different blowing agent and facer configuration compared to K15 as sold on the market. The board utilised the HFO blowing agent used in our K100 range, and the facer was 50 microns and unperforated. The standard K15 product utilises a 25 micron perforated facer.

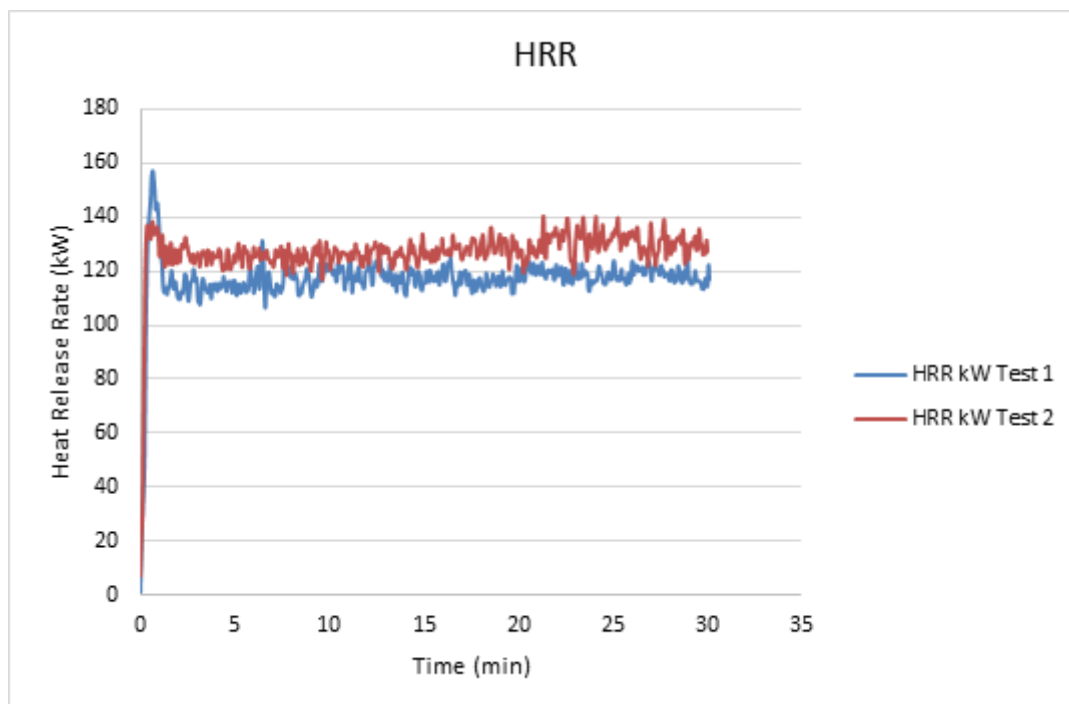
We can confirm that the two other Terracotta BS 8414-2 tests featuring K15 on the Kingspan website were conducted with current, as placed on the market product and that they met the BR 135 performance criteria (Test Report 303930 & P100184-1000).

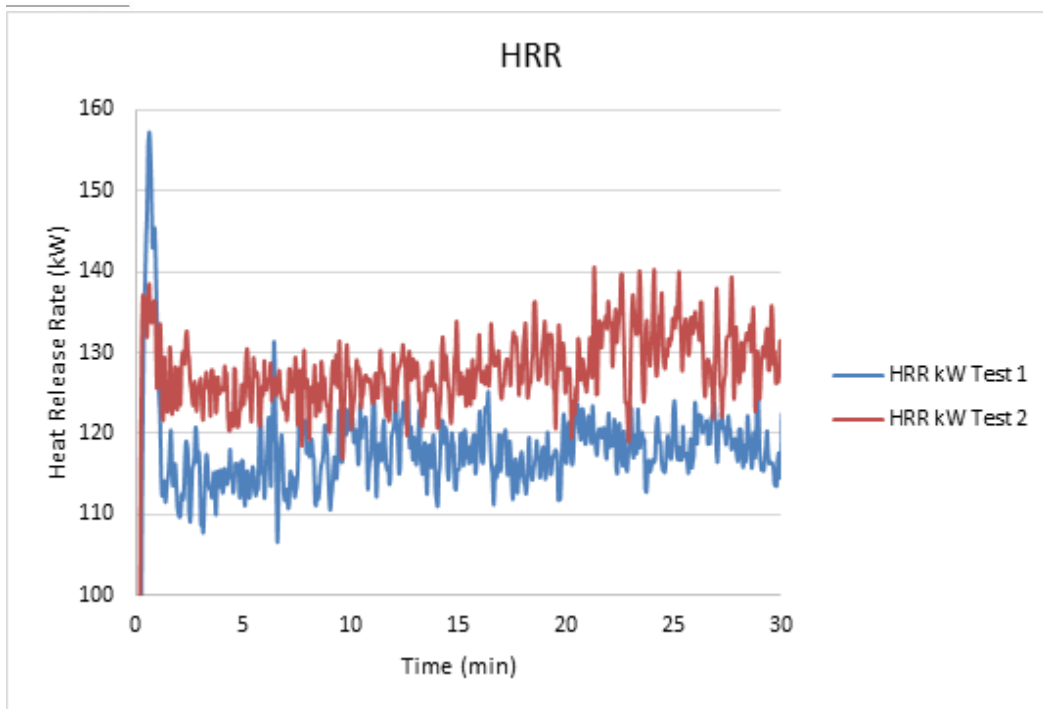
In addition, we conducted an intermediate scale comparison of the development version of K15 used in the 2014 HPL and terracotta tests mentioned above with K15 as sold on the market to ISO 13785-1. This approach was adopted because, while performance in SBI tests can be influenced via smaller changes to components such as facers (due to the sensitivity of the classification criteria), we considered that the more intense heat source used in ISO 13785-1 testing would provide a more informative comparison of how the two insulation types would perform in a large scale test.

A trial sample of insulation was created to the specification of the board used in the 297099 test.

This trial sample and current K15 were then tested to ISO 13785-1. The ISO 13785-1 reports can be supplied directly if required. Report EUI-19-000211A features the current K15 product ("Test 1"), and Report EUI-19-000211B features the trial product ("Test 2").

As can be seen from the test reports, the standard product in Test 1 has a higher peak heat release rate at the beginning of the test, but drops away quickly and stays lower than the trial product from Test 2. Below are two graphs where these results are overlaid.





In terms of char depth, Test 1 was slightly deeper at 35mm (compared to 30mm in Test 2) at 500mm from the base from the sample. However at 1000mm from the base of the samples both tests showed a char depth of 20mm.

These tests show a comparable level of performance between the two tested products, with the as placed on the market product having a slightly lower overall heat release rate.

In conclusion we hope that these reports and additional information provide assurance that the withdrawn tests, which may have previously been relied on, have suitable replacement testing fully representative of systems containing K15 as sold on the market.

If you have any queries please do not hesitate to contact us and we would be happy to discuss these matters in greater detail.

Yours faithfully,

Adrian Pargeter  
For Kingspan Insulation Ltd