

To: Mr Clive Betts, Chairman, Housing, Communities and Local Government Committee
From: ROCKWOOL Group (on behalf of Mirella Vitale)
Date: 16 July 2018
Re: Your letter dated 10 July 2018 inviting comment on additional evidence provided by Kingspan's Mr Burnley

Dear Mr Betts,

Thank you very much for the opportunity to respond to the additional evidence submitted to the Committee by Kingspan's Mr Burnley. Having reviewed the materials in considerable detail, we believe the evidence submitted does not support key conclusions Mr Burnley draws from it.

Mr Burnley comments, "*Our position is not about commercial benefit but about ensuring that building regulations are always rooted in science and engineering*". And yet in the evidence provided, "science and engineering" is substantially replaced by conjecture, supposition, and misdirection. It is disingenuous to suggest, for example, that combustible materials have the same fire performance as non-combustible materials.

Most importantly, the evidence submitted does not demonstrate that any materials that are CE marked and certified as Euroclass A1 or A2 have burned. As best we can determine from the information provided, the evidence submitted for two of the three tests pertains to products that are not produced or sold in the EU or the United Kingdom and whose supposed non-combustibility or limited combustibility is inferred but not certified.

Little scientifically relevant information is provided on two of the three tests upon which Mr Burnley's conclusions rest. The one test (Test #2) for which a full report is provided contains such serious deficiencies that in our view, one cannot draw any relevant conclusions from it. Only one of the three tests referenced (Test #3) appears to have been conducted to BS 8414/BR 135 standards, though absent the full test report, one cannot draw any meaningful conclusions from a simple declaration of a test's result – be it a "pass" or a "fail" declaration.

For the most part, one cannot determine from the information provided whether the products tested are designed or certified to be used in a ventilated façade application. In one notable example (Test #2), the insulation tested appears primarily designed for industrial applications having nothing to do with insulating the exterior of buildings.

What's more, despite the limited materials provided, we have nevertheless identified several non-standard configurations within the test set-ups that further call into question the conclusions Mr Burnley draws from these tests; and by implication, also further reinforce the assessment that large-scale fire tests are a wholly inappropriate means to ensure the safety of those living or working in tall buildings and that an effective way of doing so would be to ban the use of combustible materials in the exterior walls of high-rise and high-risk buildings.

Please see below for more specific details supporting the assessments above.

Test #1

In relation to Test #1, Mr Burnley notes that no test report is provided. One cannot draw meaningful conclusions relying primarily on photographic or video "evidence", as drawing such conclusions requires knowing in detail what one is observing, which only the full test report can provide. The submitted graphic

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depictions of the test set-up provide limited insights, though they do appear to show the set-up is testing a *non-ventilated façade* construction.

The horizontal cavity barriers with no intumescent strips and sealed gaps are not typical in UK constructions (in addition to the foil-facing on the insulation, which Mr Burnley notes is not typical in UK constructions). What's more, the foil-facing would require some form of adhesive to affix it to the insulation boards, which would add fuel to the set-up.

Notwithstanding Mr Burnley's assertion that the insulation is rated Euroclass A1, there is no evidence to confirm that the product tested correlates to the product brochure provided. Such details are materially relevant, absent which it is simply not possible to draw meaningful conclusions.

To the best of our knowledge, neither the insulation or cladding in this test is available for sale or use in the UK.

Additionally, we note that the insulation used in this test *is not* produced by ROCKWOOL Group, despite "Rockwool" appearing in the manufacturer's name. As such, you may wish to contact the manufacturer in question should you want any insights directly from them.

Test #2

The evidence submitted to the Committee includes a full test report for only one of the three tests (Test #2), which as Mr Burnley rightly notes, uses a BS 8414 test methodology with an Australian variant on pass/fail criteria. While the Australian criteria do include some requirements that are more stringent than the BR 135 and BS 8414, the test conducted contains no cavity barriers (as Mr Burnley acknowledges), which would make the set-up non-compliant with Approved Document B.

What's more, the test set-up includes a cavity gap between the cladding and insulation that is larger (125mm) than is typical in UK constructions (40-100mm). Both these abnormalities would have the effect of increasing the speed and intensity of the fire's temperature increase, which is the parameter relevant to a BS 8414 test upon which the tested combination supposedly fails.

Additionally, the insulation used in this test appears primarily designed for **industrial applications**, such for insulating pipes or furnaces, and thus not intended for insulating the exterior of buildings.

Further, from the evidence submitted, one cannot determine if the products being tested are CE marked or have proper Euroclass ratings. It is thus not accurate to assert that the products are A1 or A2, as this fact has not been established by the evidence provided.

To the best of our knowledge, neither the insulation or cladding in this test is available for sale or use in the UK.

As with Test #1, we note that the insulation used in this test *is not* produced by ROCKWOOL Group, despite in this case "Rockwool" appearing in the product's name. As such, you may wish to contact the manufacturer in question should you want any insights directly from them.

Test #3

Of the three tests Mr Burnley references, Test #3 is the only one that appears to have been conducted to BS 8414/BR 135 standards. Absent the full test report, however, one cannot draw any meaningful conclusions from a simple declaration of a test's result – be it a "pass" or a "fail" declaration.

Based on the photographic evidence submitted, we would note, however, that the gaps between the cladding panels appear to be larger than one would expect to find in a typical UK construction. This could have the effect of creating wider airflow channels, thus increasing the fire's ability to spread from its origin in the fire crib and potentially affecting the test results.

Further regarding Test #3, the ROCKWOOL Group Euroclass A1 insulation used is available for sale and use in the UK; and to the best of our knowledge, so is the tested cladding product. It is not possible from the evidence provided, however, to confirm if the cladding product is certified for use as tested.

Additional assertions

In Mr Burnley's letter to the Committee, he makes other assertions about which we remain unconvinced. In our view, several of these assertions are materially relevant enough to warrant calling your attention to them.

For example, Mr Burnley asserts that *"there is a significant range of performance in 'combustible' materials from those that, to all intents and purposes, have the same performance as 'non-combustible' to those that are 'highly flammable'"*. This is not correct. By definition, combustible materials will burn and non-combustible ones will not. Their combustibility performance cannot be equated.

Further, Mr Burnley notes, *"Product classifications say nothing about how one material will perform when combined with another in a system"*. This is true when considering combustible materials, but as non-combustible materials do not burn on their own, they will not burn and not contribute to a fire when combined. Non-combustibility is an inherent characteristic of a material and does not change if used in a system.

The letter further asserts that BS 8414 is robust enough to account for the risks of combustible insulation. *"Systems incorporating 'combustible' thermoset insulation materials can pass BS 8414 because, despite not meeting the requirements to be classified as 'non-combustible' or 'limited-combustibility', thermoset insulation materials are also mostly 'non-flammable'. They have been designed to char when exposed to fire / heat and self-extinguish when that fire / heat is removed. Therefore, relying on simplistic classification of individual products is not sufficient"*.

In the first instance, there is no scientific basis in the Euroclass classification context for the term "non-flammable". We do not know why Mr Burnley chooses to introduce new terms that are not based in "science and engineering", but we do not believe doing so contributes to a well-informed discussion of these issues.

Furthermore, in our view, there are more risks to combustible insulation than Mr Burnley's assertion indicates. Professor José Torero, an expert witness to the Grenfell Tower Inquiry, has specifically cited the risks of combustible insulation and the inadequacy of BS 8414 in accounting for those risks. Professor Torero remarks, *"A critical aspect that is missed by BS 8414 and observations is the burn-out of the insulation material [...] the insulation has the potential to burn for a much longer time period [than the cladding]. The duration of localized burning will be critical when defining the capacity of these fires to break back into the building"*.

Professor Torero further observes that *"the fire source, the focus on flame spread and duration of the test in BS 8414 all mask the role of the insulation and over emphasize the role of the rain-screen. None address the burn-out times and their role on sustaining localized burning"*.

What's more, a study conducted by the Polytechnical University of Milan shows that on a building comparable to Grenfell Tower, the combustible insulation used would contain approximately double the fuel content of the cladding.

In a separate passage, Mr Burnley states, *"Given that passing BS 8414 / BR 135 requires better performance than requiring insulation and cladding materials to be 'non-combustible' or 'limited-combustibility' there can be no case to ban combustibles if systems in which they are incorporated can pass BS 8414 / BR 135"*.

We note that this assertion is in clear contrast to Dame Judith's remark in her letter to you on 05 March 2018, in which she says that using materials of limited combustibility or better is *"undoubtedly the low risk option"* compared to BS 8414 testing.

Mr Burnley concludes that, *"If Government is insistent on banning all but 'non-combustible' or 'limited-combustibility' materials then the systems that are used in future should still be subject to BS 8414 testing and classification according to BR 135"*. But with reference to desktop studies, Mr Burnley notes, *"With the vast array of available products and potential small variations in design, it would be impossible to test everything via a BS 8414 test as there simply is not the test rig capacity to do so"*.

It is logically inconsistent to say that all systems should be subject to BS 8414 testing, while at the same time saying that since there are so many possible system combinations, desktop studies should be allowed, such that combustible materials could be used without testing.

Mr Burnley also notes, *"Similarly, systems comprising 'non-combustible' / 'limited-combustibility' insulation materials have been involved in some major fires around the world"*. This is surely true but in itself wholly irrelevant. The relevant issue is what happens (or doesn't happen) in relation to those materials when they are exposed to fire. Rather than contributing to fuelling a fire, Euroclass A products can contribute to containing it.

Mr Burnley reflects on the impact banning combustible materials would have on innovation, stating, *"Banning products solely on the basis of their combustibility classification would severely restrict innovation across the building industry"*. We find this a wholly unpersuasive argument. To the best of our knowledge, architectural creativity and flexibility has not suffered in any of the countries – such as Germany, France, Poland, Croatia, Czech Republic, and others – that already ban or restrict combustible materials on high-rise buildings.

Regarding BS 8414 tests

In his letter to you, Mr Burnley makes significant reference to the robustness of the BS 8414 tests, drawing heavily on a March 2018 report that Kingspan commissioned from the Tenos International Fire Engineering Consultants. In the limited time available to respond, we have reviewed the report submitted to the Committee and would like to share several preliminary reflections.

Most importantly, this review is very limited in scope. Of the large-scale tests that exist worldwide, it compares only one to BS 8414. It's not obvious why they have chosen the NFPA 285 standard as the comparator. Similarly, the review only considers four countries for comparison (England/Wales, UAE, USA, and New Zealand), which again suggests a limited scope and thus limited utility. It's unclear, for example, why they have omitted Australia from the comparison, in that it applies more pass/fail criteria than in England/Wales (reference Test #2 in Mr Burnley's submission). As such, in our view, the report provides a very selective analysis of BS 8414 as well as presenting technical information that is narrow, in some cases unclear, and broadly open to significant interpretation.

Mr Burnley rightly notes that BS 8414 tests require precision in testing the products and configurations exactly as they will be installed. And yet the preponderance of the evidence he provides fails to live up to this standard, relying instead primarily on constructions and products that are not approved for use in the UK; on test configurations that do not replicate typical UK construction practice; and on conjecture and supposition rather than demonstrable facts or even proper test reporting. If anything, such “evidence” further accentuates the myriad deficiencies involved in relying on testing at all when it comes to ensuring the safety of people living or working in high-rise and high-risk buildings.

In conclusion, we don’t believe any of the evidence you invited us to review challenges the Government’s intention to institute a legal ban on the use of combustible materials in the external walls of high-rise residential buildings. We continue to advocate for expanding the proposed ban to include other high-rise and high-risk buildings, as we believe this would be an effective way to increase public safety, upon which our submission to the public consultation will elaborate further.

Thank you once again for the opportunity to respond to the additional evidence provided to the Committee. Please let us know if we can be of further assistance to you or your Committee colleagues.

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