Response 46

Respondent Details

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Organisation (if applicable)	Wood Panel Industries federation
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Please state whether you are responding on behalf of yourself or the organisation stated above	organisation

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	Trade association

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	Don't Know
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?	Don't Know
c. If no, how else could the ban be achieved?	[Free text answer]

Question 2	**Yes/No/Don't Know**
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	Don't Know
b. If no, to what height, higher or lower, should the ban apply? Explain why	Don't Know
c. throughout the entire height of the wall, i.e. both below and above 18m?	Don't Know
d. to high-rise residential buildings only?	Don't Know
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	Don't Know
f. Please provide any further information in relation to your answers above	[Free text answer]

Question 3	**Yes/No/Don't Know**
a. Do you agree that the European classification system should be used?	Yes
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	Don't Know
c. If no, what class should be allowed in wall construction and why?	[Free text answer]

Question 4	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	No
b. If no, what aspects of the wall should it cover?	Don't Know

c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	Don't Know
d. Please provide any further information in relation to your answers above	We believe testing of the system should be a route to compliance alongside deemed to satisfy routes using non or limited combustible materials. However any tests used should be appropriate for the end use and desired goals, coupled with certification and as-built checks.

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Yes
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	SIPS panels subject to testing of the system.
c. If no, what alternative way of achieving the policy aims would you suggest?	We believe testing of the system should be a route to compliance alongside deemed to satisfy routes using non or limited combustible materials. However any tests used should be appropriate for the end use and desired goals, coupled with certification and as-built checks.

Question 6	**Yes/No/Don't Know**
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	Don't Know
b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	Don't Know
c. the ban should not affect projects where building work has already begun on site?	Don't Know
e. Please provide any further information in relation to your answers above	[Free text answer]

Question 7	**Free text answer**
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system	Wood-based panel sheathing panels to SIPS infill panels.

in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	

Question 8	**Free text answer**
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	WPIF is a trade association representing industrial manufacturers of wood based panels. Some of our members manufacture products used as a component within structural external walls, predominantly within low to medium rise timber framed buildings but are also be used in Structural Insulated Panels (SIPS) that may be used as infill panels in the walls of steel or concrete high rise buildings. Our member's products are not used for cladding systems on buildings above 18m. We have made the differentiation between the 'external wall' and 'cladding' in that the external wall is the structure from the inside of the building up to the outer skin of that structural element e.g. a timber framed wall has an outer skin of wood based panel protected by a breather membrane and an inner surface of plasterboard fixed to timber studs, whilst 'cladding' or cladding system is attached to the external wall to protect the external wall from the weather.

	We have done this because the consultation also makes the distinction between the whole wall and the cladding where the cladding can be considered separate from the other elements of the wall. If the new requirements were to be for the whole wall we foresee a potential issue/unintended consequence where there could be scope creep to buildings that are less than 18 metres where the risks and the fire strategies are different. Therefore any requirements that are set must be clear as to what and why they apply to any particular situation to avoid the blanket adoption of particular materials or construction methods in all building types and sizes (e.g. low-rise to high-rise). If however the requirements were restricted to the cladding system alone then clarity should be given as to exactly what parts of the structure the requirements apply to. Plus consideration given to the same potential unintended consequence of scope creep into low/medium rise building. In respect of compliance, as a general concept we believe that flexibility via testing as well as deemed to satisfy routes should be allowed, however the tests used should be validated and proven to be fit for purpose. To allow tests as well as deemed to satisfy routes would enable compliance whilst meeting the requirements of other factors such as sustainability, but also allow innovative solutions and not stifle the development of emerging construction types; thus allowing all material types to potentially be used. In addition the approved document or the regulations should look at the as-built construction to verify compliance of the construction with the system that was tested and certified.
Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	Please tick here:

Response 47

THE MODULAR & PORTABLE BUILDING ASSOCIATION

The voice of the modular industry

Modular & Portable Building Association response to the Welsh Government Consultation "Banning the use of combustible materials in the external walls of high-rise residential buildings"

The Modular & Portable Building Association represents the UK's manufacturers and distributors of permanent and relocatable modular building systems. The modular sector directly employs over 5000 people around 100 companies and accounts for an annual turnover of approximately £1 billion. The MPBA represents 90% of this sector and is therefore the leading voice for the modular industry. Additional information including a list of our members can be found on our website: www.mpba.biz

Questions
Respondent Details

Name	Jackie Maginnis
Position (if applicable)	Chief Executive
Organisation (if applicable)	Modular & Portable Building Association
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Email address	Jackie@mpba.biz
Telephone number	01686 430400
Please state whether you are responding on behalf of yourself or the organisation stated above	I am responding on behalf of the Modular and Portable Building Association

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify) Trade Association	X

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	No. This question should be targeted at the specifics of the external cladding layer. We believe regulations should be applied based on the entire built up system performance, and can see no advantage in testing individual materials in isolation, since their behaviour when combined with other products can be quite different. For high rise residential buildings performance based standards are already available to test against, either BS8414 or BR135.
b. Should the ban be implemented through changes to the Building Regulations (i.e. through legislation rather than the Approved Documents)?	No. Approved document B is the correct mechanism to promote any necessary changes.
c. If no, how else could the ban be achieved?	Approved Document B is the channel for any regulatory changes to be implemented. The findings from Dame Judith Hackitt's report once implemented will also address the main failings in the construction sector.

Question 2	**Yes/No/Don't Know**
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	No. Detail contained within the Hackitt report supports the appropriate use of non-combustible material as low risk.
b. If no, to what height, higher or lower, should the ban apply? Explain why	Within the Hackitt report there is a mention of building heights 10 storeys or above, which may be a better definition than the 18m rule?
c. throughout the entire height of the wall, i.e. both below and above 18m?	The Hackitt report mentions building heights 10 storeys or above, which may be a better definition than the 18m rule? Whatever decision is made it needs to be clearly defined with no ambiguity or opportunity to misinterpret.
d. to high-rise residential buildings only?	No. If a ban is introduced, should it be in place only for refurbishment works of existing buildings? New buildings will always be designed and built with the latest fire protection systems in place.
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	If a ban is introduced this should not include other building purpose groups as generally they pose lower fire risk. Not all these buildings are occupied 24/7 and therefore have different requirements and approaches in respect of evacuation strategy.
f. Please provide any further information in relation to your answers above	

Question 3	Yes/No/Don't Know
a. Do you agree that the European classification system should be used?	No. It is our belief that product testing should still be allowed against our national classifications.
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	In the aftermath of the Grenfell Tower fire, further BRE testing of materials incorporating A2 classified products failed the BS 8414 test, so a reliance on this European classification alone does not solely demonstrate the behaviour of a product in a full system setup. The tested whole system should always be the measure of ultimate envelope performance.
c. If no, what class should be allowed in wall construction and why?	The only way to ensure cladding materials are fit for purpose, and fully compliant, is to test entire systems and not just individual components. Therefore the regulations should allow manufacturers to take systems based approach with a single test for all system types whether deemed to include combustible or non-combustible materials.

Question 4	Yes/No/Don't Know
a. Do you agree that a ban should cover the entire wall construction?	No
b. If no, what aspects of the wall should it cover?	Any focus of a ban should concentrate on materials that are specific to the outer most layer of the external cladding make up, any
c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	Materials such as these can take up significant proportions of the surface area on a building façade and these materials may benefit some type of reform in terms of regulation. A

	performance may be necessary to demonstrate its suitability for use.
d. Please provide any further information in relation to your answers above	

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	While we do not support a wholesale ban. It should concentrate on the materials that are specified as the outer most layer of the cladding system on the building, i.e. any flat surface. Modern building facades are complex engineered systems meeting fire, thermal and weather performance requirements, meaning that it might be difficult to replace items such as windows, gaskets, seals & membranes, many with no suitable non- combustible alternatives. This may also prove very
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	The type of insulation product used within an external wall construction could be included on the exemption list. If it can be demonstrated in a tested system performance that is appropriate for its intended use.
c. If no, what alternative way of achieving the policy aims would you suggest?	We believe a ban, should it be introduced would consider the material in the outer most layer of a rain screen or cladding panel system.

Question 6	**Yes/No/Don't Know**
Do you agree that:	

a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	No. Any proposed ban should only apply to existing building once a risk assessment has been undertaken on the individual building. Other measures fire detection, sprinkler or suppression systems may already be in place, that mean it's not essential to make wholesale cladding changes and the merits of each building should be addressed individually.
b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	No. But this this gives an opportunity to review the construction and choices of materials for the given project. These projects may already have other measures in place that may significantly mitigate any significant
c. the ban should not affect projects where building work has already begun on site?	Yes. New projects that are already under construction may already have state of the art fire detection systems that are being installed.
c. Please provide any further information in relation to your answers above	

Question 7	**Free text answer**
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	There are many materials that would be affected in the make-up of a wall construction which would not meet the A2 Classification or better. Insulation type; gaskets; seals; membranes. We believe a system build up should be able to demonstrate its performance as a tested system. Due to design specification and detailing materials with a poorer performance than A2 within the build-up may not be directly exposed to the early stages of a fire, and can therefore pass the appropriate test as

	system being compliant. It should not be the intention of any ban to stifle future innovation.
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	We believe there has been a market shift to the specification of non or limited combustibility materials following the fire in June 2017. It is possible that this is being driven by the insurance industry.
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	This could add a further layer of confusion within the industry. There will be many buildings out there using perfectly acceptable designed and manufactured BS8414 tested systems. Will residents occupying properties in these buildings be unfairly penalized through higher insurance premiums should BS8414 be no longer be recognised as a route to demonstrate compliance.
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	As a trade association it is difficult for us to generate a response based upon accurate and sufficient project data.
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	A wholesale ban on combustible materials will make it extremely difficult to obtain non-combustible insulation across the entire construction sector. This also generates a monopoly for a specific sector with little or no market competition in place, which could lead to shortages and price rises across the supply chain. Many of our members specify PIR insulation in their product ranges for the inherent thermal properties. Generally our modular buildings are lightweight structures with high thermal performance helping the Government

	with targets of continuing to reduce carbon emissions.

Question 8	**Free text answer**
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	Modular & portable buildings often use composite constructions in the build-up of external walls. In many instances products may contain combustible insulation that is entirely encapsulated between non-combustible facings (classified as non-combustible or limited combustibility). These constructions and products are individually tested to meet the necessary fire performance requirements for their intended markets. A fully encapsulated design also means that they are not at risk of significant fire spread up the façade of the building. Therefore it is felt that these construction typologies are low risk and therefore there is no sense in banning these construction types. A risk based approach should be considered when reviewing the building purpose groups where a change in regulation requirement is being considered through <u>any</u> form of ban. Many of our members have considerable modular hire fleets which deliver temporary building solutions across many different sectors and building purpose groups. Careful consideration should be given to the results from this consultation otherwise it could have catastrophic consequences for our industry and our current and future clients. Our association and its members would welcome the chance to participate in further discussions and help with reviewing proposals before any new regulatory measures are introduced.

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 48

Insulation Manufacturers Association response to the Welsh Government consultation "Banning the use of combustible materials in the external walls of high-rise residential buildings"

Questions

Respondent Details

	Respondent details
Name	Simon Storer
Position (if applicable)	Chief Executive
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Telephone number	07702 862 257
Please state whether you are responding on behalf of yourself or the organisation stated above	I am responding on behalf of Insulation Manufacturers Association

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer /Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier/ Resident	
Tenant representative organisation	
Other interested party (please specify) Trade Association	✓

Question 1	Yes/No/Don't Know
a. Do you agree that combustible materials in cladding systems should be banned?	No. A ban on the use of combustible materials in cladding systems brings no guarantees that buildings will be safer. In our view, the best route to ensuring that these buildings meet the necessary safety standards is to ensure that whole systems are tested to an agreed methodology to give assured performance. Whichever test is chosen, it needs to have a robust set of criteria. In our view the BS 8414/BR135 test is the best route to ensure such compliance. There should be only one testing regime to avoid confusion and conflict in the market place. We can see no advantage in testing individual materials in isolation, since their behaviour when combined with other products can be quite different. Whether or not a ban on the use of combustible products in buildings is introduced, there needs to be much tighter regulation around compliance (checking that products are not being substituted) and that they are being properly installed, something which appears to be lacking currently.
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?	If a ban of some kind is introduced, then changes should come through Approved Document B to allow flexibility and to avoid stifling innovation.
c. If no, how else could the ban be achieved?	

Question 2	Yes/No/Don't Know
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	We do not support a ban. We maintain our view in answer to question 3 that only full-system testing of all build-ups, to a unified test, should be supported.

b. If no, to what height, higher or lower, should the ban apply. Explain why	Should such a ban come into force we would prefer to see this dealt with at a floor or storey height rather than a fixed height. In Dame Judith Hackitt's report, she alludes to buildings which are 10 storeys or higher which would be our preferred option rather than a fixed height of 18m. Whatever is decided, whether it be storeys or number of floors or a fixed height of 18m, then the rules around this need to be made much clearer.
c. throughout the entire height of the wall, i.e. both below and above 18m?	If it is to be introduced, we would favour this being for those parts of the building above the prescribed height/storey level.
d. to high-rise residential buildings only?	If a ban is introduced our preference would be for this to be for those parts of the building above the prescribed height/storey level. However, we do not see the need to ban on these products on new buildings since during the design phase, other fire protection measures, both passive and non-passive, can be introduced to the building. Any ban, if introduced should only apply to buildings which are being refurbished.
e. If no,to all high-rise, non-residential buildings e.g. offices and other buildings, as well as residential buildings?	If a ban is introduced this should not include other buildings since, generally, these pose lower fire risks and take a different approach in terms of their evacuation strategies
f. Please provide any further information in relation to your answers above.	If a ban is introduced, what will happen if there is a change of use of a building?

Question 3	**Yes/No/Don't Know**
a. Do you agree that the European classification system should be used?	As stated earlier we do not support a ban, however, we do not believe that either the national classifications "non-combustible" and "limited combustibility" based on testing to BS476-4 and -11 or the European classifications of Euroclasses A1 and A2 based on testing to BS EN ISO 1182 & 1716 / BS

	EN 13823 provide robust classification methods in order to achieve the objective of improving the safety of building occupants in the event of a fire. We believe that it would be helpful if there were a single product classification system in operation in the UK. It should be noted that even in the Government's own fire tests following Grenfell, systems which incorporated A2 classified products failed the BS 8414 test and reliance on this Euroclassification alone should not be taken as an indication of how a product will perform in a full system set up.
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	
c. If no, what class should be allowed in wall construction and why?	We believe that the only way to deem whether cladding materials are fit for purpose, and therefore compliant, is to test whole systems and not individual components. The regulations should take a systems-based approach with a single test for all system types whether deemed to be combustible or non-combustible. BS 8414 is an example of a worldwide renowned test which takes into account all the components which make up the cladding including the cavity in a ventilated façade, something which plays a key role in the testing and which clearly cannot be measured in isolation.

Question 4	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	No.

b. If no, what aspects of the wall should it cover?	If a ban is introduced then we feel this should be restricted to the outer cladding panels in rainscreen applications only, since witness reports to the Grenfell Inquiry have clearly indicated that the ACM was the most significant contributor to fire spread. Additionally the Government's fire adviser Sir Ken Knight has expressed his views that any ban should be limited to the outer panels (see here) for more information. It will be enormously difficult for the Government to decide which elements of a cladding system should be included and excluded without over complicating the situation. Will it extend to windows, membranes and fixings? Where will the line be drawn and by whom and how will this be enforced?
c. Should a ban also cover window spandrels, balconies, brise soleil, and similar building elements?	Since these components are not suitable for testing to BS 8414 a performance test to ensure their fitness for purpose may need to be devised.
c. Please provide any further information in relation to your answers above.	

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Should a ban be introduced, which we do not support, then there will need to be exceptions. As already stated in 6b, it will be enormously difficult for the Government to decide which elements of a cladding system should be included and excluded without over complicating the situation. Will it extend to windows, membranes and fixings? Where will the line be drawn and who and how will this be enforced?
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	

c. If no, what alternative way of achieving the policy aims would you suggest?	Should a ban be introduced, which we do not support, then it should be restricted to outer cladding panels in rainscreen applications only. Since the Grenfell tragedy, we have not come across any evidence of fires that have progressed out of control in buildings with systems that would comply with BS 8414. The testing of complete systems to BS 8414 is the most robust way to regulate the performance regardless of whether components are combustible or non-combustible. We already know from the Government's own BS 8414 tests that systems can fail, and in the case of the façade system used on Grenfell Tower, this failed very early on, in fact within only a few minutes.

Question 6	**Yes/No/Don't Know**
Do you agree that:	
a. the ban should apply to proposed material alternations to existing buildings, including over-cladding?	There needs to be a risk-based approach in order to bring buildings up to a level of compliance but there has to be clarity around this. Any ambiguity could raise concerns around the insurability or mortgageability of a building. We believe that the current guidance in Approved Document B is sufficient although some clearer language in the document would help. It is already evident that many buildings currently do not comply with regulations and that inspection and compliance issues are not dealt with consistently, if at all. The real emphasis needs to focus on how regulations can be enforced and penalties applied where there is evidence of non-compliance.
b. the ban should apply to alterations to existing buildings, including over-cladding?	
c. the ban should not affect projects where building work has already begun on site?	

	As with any legislation, the fact that it exists does not mean it is followed and enforcement is key to achieving the Government's aim to improve fire safety of buildings. If a ban is imposed, how will Government respond to occupants who feel their building is not safe if it is not altered to meet the requirements of any new legislation? This could bring with it potentially huge retrospective costs which the Government would need to meet if such a building was originally built or refurbished to an agreed set of standards. A ban would introduce all kinds of complexities and bring with it a whole set of unintended consequences. It would send out mixed messages to insurers and to mortgage providers who would be unclear on whether a building was deemed a high risk or unsafe just because it was designed to a set of standards which then changed before the works commence. How will the Government address any costs needed to redesign and respecify products? How will the Government reassure people that one set of buildings is deemed safe and another not?
e. Please provide any further information in relation to your answers above.	

Question 7	**Free text answer**
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	It is highly likely that all elements could be affected but it would depend on the system build-up and whether any exemptions have been put in place. Without carrying out whole-system testing to BS 8414 there will be no way of knowing whether a system is compliant. It may well be that by using products which have been individually declared as

	safe to use, a situation could arise whereby you end up with some systems comprising entirely of combustible products (with the exception of fittings etc.) which can pass the BS 8414 test whilst other systems that comprise non-combustible or limited combustibility insulation and cladding panels could fail the same test. This has the potential to have the opposite effect of the proposed ban and lead to less compliant buildings and more confusion.
b. In England there ae suggestions that since the Grenfell tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	There has been a noticeable shift to non or limited combustibility materials since the Grenfell tragedy. However, such a move, without rigorous testing to BS 8414, will not necessarily make buildings safer. As stated earlier there is a need for whole-system testing regardless of whether the components are deemed combustible or non-combustible. It should also be considered that if a ban is introduced this could have the effect that some of the buildings identified under the Building Safety Program will become non-compliant even after recladding.
c. What the impact of removing access to the BS8414 for those buildings affected by the ban test is likely to be?	Buildings will still need to meet other characteristics of the building regulations and most notably Part L for energy efficiency. A ban will lead to much thicker wall constructions as traditional non-combustible insulation will need to be up to twice as thick to achieve the same thermal performance. This increased insulation thickness will bring with it significantly additional weight which could have a structural impact. This would potentially make some projects unviable as well as adding significant cost increases for projects, since thicker walls lead to deeper window reveals and longer fixings. Increasing the thickness of the insulation will lead to lower levels of daylight in buildings which

	in turn can have a detrimental impact on the health and well-being of occupants.
d. How much extra cost would typically be involved in meeting the proposed new requirements over and against a building which meets the current requirements? (Please provide any further details.)	As an Association we are not involved with project costs
e. Please provide any further comments on the likely impact of this change for construction (e.g. supply chains)	A ban on combustible materials will inevitably lead to supply chain constraints in the insulation market. Already there is evidence of supply issues in the non-combustible sector and significant price rises in light of this. The UK has essentially one main supplier of non-combustible insulation which also raises concerns. If shortages do start to appear, then there will inevitably be a slow-down in construction output which will have the knock-on effect of failing to meet the Government's already ambitious targets for carbon reduction. The PIR insulation industry has been in existence for 40 years and accounts for around 40% of all thermal insulation sold into the UK market with an estimated turnover of around £400m per annum and employing around 3500 people. Insulation is one of the most important tools in helping to combat climate change and PIR insulation, which can used in a wide variety of applications (including walls, roofs and floors), meets the required U-values for new buildings as well as when retrofitting existing buildings. Besides its high thermal performance, it has a high weight to strength ratio and has good water resistance properties. Other performance characteristics of non-combustible insulation need to be taken into account alongside the crucial fire performance characteristics and not viewed in isolation.

Question 8	Free text answer
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 49

Respondent Details

Name	[redacted]
Position (if applicable)	
Organisation (if applicable)	
Address (including postcode)	
Email address	
Telephone number	
Please state whether you are responding on behalf of yourself or the organisation stated above	

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	X
Building Control Approved Inspector	
Architect	
Manufacturer	
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	Yes
b. Should the ban be implemented through changes to the Building Regulations (i.e. through legislation rather than the Approved Documents)?	Yes
c. If no, how else could the ban be achieved?	Problem is not all buildings are now constructed using building regulations. They are built using BS9999 or BS9991 to try and satisfy the regulations in some way but this is not always fully complied with and buildings passed.

Question 2	**Yes/No/Don't Know**
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	No it should also depend on the use of the building and its occupants.
b. If no, to what height, higher or lower, should the ban apply? Explain why	Dependant on what the building is being used for?
c. throughout the entire height of the wall, i.e. both below and above 18m?	Yes
d. to high-rise residential buildings only?	No
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	Yes
f. Please provide any further information in relation to your answers above	Dependant on what the building is being used for. E.g. even if it was an office accommodation the occupants still have to evacuate the building.

Question 3	**Yes/No/Don't Know**
a. Do you agree that the European classification system should be used?	Yes
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	Yes but ideally Class A1
c. If no, what class should be allowed in wall construction and why?	Class A1 but this may be restrictive on the type of cladding that can be used and some of the smaller items e.g. if it was the whole wall could wallpaper be used or just paint?

Question 4	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	Yes
b. If no, what aspects of the wall should it cover?	

c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	Yes
d. Please provide any further information in relation to your answers above	With balconies on residential flats the residents may start to have barbeques on them which could result in these catching fire and spreading to other parts.

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Yes
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	Seals to window and door frames, make up pieces to the frames.
c. If no, what alternative way of achieving the policy aims would you suggest?	

Question 6	**Yes/No/Don't Know**
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	Yes
b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	Yes
c. the ban should not affect projects where building work has already begun on site?	No
e. Please provide any further information in relation to your answers above	If the works have not started the plans can be amended to ensure compliance with new regulations. Existing cladding can be upgraded or replaced but this maybe dependant on cost to the residents unless funding is provided via government grants.

Question 7	Free text answer
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	External cladding materials, insulation, fire break materials and installation. If Class A1 limited surface cladding materials available at present. Wallpaper on the inside if the whole wall is taken into account as part of the burn test
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	Problems finding cladding systems that meet Class A1 more at Class A2 at present.
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	Don't know
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	Anticipated to be substantial.
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	Limited availability of Class A1 cladding, very limited access to full cladding systems meeting Class A1. Any products meeting Class A1 are being used more at present causing shortfall in supply. Limited access to testing facilities for systems to be checked resulting in long delays.

Question 8	Free text answer
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	Long delays in items being tested in Labs/ approved testing locations

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:** 

Response 50

Respondent Details

Name	Sarah Kostense-Winterton
Position (if applicable)	Executive Director
Organisation (if applicable)	Mineral Wool Insulation Manufacturers Association (MIMA)
Address (including postcode)	C/o KW Communications, 16 Old Queen Street, London, SW1H 9HP
Email address	sarah@mima.info
Telephone number	020 7293 0870
Please state whether you are responding on behalf of yourself or the organisation stated above	

	Select one
Please indicate whether you are applying to this consultation as:	
• Builder / Developer	
• Designer / Engineer / Surveyor	
• Local Authority	
• Building Control Approved Inspector	
• Architect	
• Manufacturer	
• Insurer	
• Construction professional	
• Fire and Rescue Authority representative	
• Property Manager / Housing Association / Landlord	
• Landlord representative organisation	
• Building Occupier	
• Tenant representative organisation	
• Other interested party (please specify)	Trade body

Response to the Welsh Government's Consultation on the Banning the use of combustible materials in the external walls of high-rise residential buildings from the Mineral Wool Insulation Manufacturers' Association (MIMA)

Introduction

The Mineral Wool Insulation Manufacturers' Association (MIMA) is a trade body providing an authoritative source of independent information and advice on glass and stone wool insulation. MIMA actively promotes

the benefits of mineral wool insulation and the contribution it makes to the energy efficiency of buildings and to the comfort and well-being of their occupants.

We represent four of the leading insulation companies in the UK - Isover Saint-Gobain, Knauf Insulation, ROCKWOOL and Superglass.

Question 1:

a. Do you agree that combustible materials in cladding systems should be banned?

Yes

b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?

Yes. The ban should be implemented through changes to the law.

c. If no, how else could the ban be achieved?

n/a

Question 2:

Do you agree that the ban should apply:

a. to buildings 18m or over in height?

Yes. We believe that the ban on combustible materials should apply to all buildings 18m or over in height as well as to high-risk, high-occupancy buildings such as hospitals, care homes, schools, hotels, offices and entertainment venues, regardless of their height.

b. If no, to what height, higher or lower, should the ban apply? Explain why.

n/a

c. throughout the entire height of the wall, i.e. both below and above 18m?

Yes.

d. to high-rise residential buildings only?

No. We believe that the ban on combustible materials should apply to <u>all</u> buildings 18m or over in height as well as to high-risk, high-occupancy buildings such as hospitals, care homes, schools, hotels, offices and entertainment venues, regardless of their height.

e. If no, should the ban apply to high-rise non residential buildings, e.g. offices and other buildings, as well as residential buildings?

Yes. This is essential for multiple reasons, including:

- Occupants of all high-rise and high-risk buildings should enjoy no lesser standard of safety than those in residential buildings.
- There is a significant trend towards multi-purpose buildings as well as the conversion of office buildings to residential buildings around the UK. It is imperative that our buildings are future-proofed to allow for changing use over their lifetimes in a manner that ensures continued public safety.
- A multi-tier system introduces significant complexity which goes against the need for clear and straightforward public safety requirements.

Question 3:

a. Do you agree that the European classification system should be used?

Yes.

b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?

Yes.

c. If no, what class should be allowed in wall construction and why?

n/a

Question 4:

a. Do you agree that a ban should cover the entire wall construction?

Yes.

b. If no, what aspects of the wall should it cover?

n/a

c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?

Yes. We believe a ban should also cover window spandrels, balconies, brise soleil and similar building elements. The importance of this was highlighted most recently by a fire which spread to four balconies at a block of flats in West Hampstead.

Question 5:

a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?

Yes. We consider that specific, non-substantive components with minimal 'fuel source potential' could be exempted.

b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?

Exemptions should be limited to non-substantive components with minimal 'fuel source potential'.

We suggest that exempted components be included on an exemption list which clearly and unambiguously defines:

- the description of the exempted component and its specific, allowed purpose;
- its composition and fire performance (Euroclass, calorific content, etc);
- any limiting dimensions;
- the required certification of the exempted component;
- the quantity of exempted component that may be used;
- the allowed location of the exempted component and/or any prohibited locations; and
- any restrictions on how the exempted component may be used in combination with other materials, notably other exempted components.

Components which should be reviewed under such a framework would include internal wallpaper and paint, window frames, gaskets and seals, vapour membranes, surface finishes and laminated glass.
c. If no, what alternative way of achieving the policy aims would you suggest?

n/a

Question 6:

Do you agree that:

a. the ban should apply to proposed material alterations to existing buildings, including over cladding?

Yes

b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?

Yes

c. the ban should not affect projects where building work has already begun?

No. We support a risk-based approach for assessing existing buildings, however the retention of combustible cladding and/or insulation on high-rise buildings should only be considered appropriate in exceptional circumstances. These circumstances would need to be carefully defined by both expert fire engineers and the relevant approval authorities, including through consultation with all building occupants such that they felt fully confident as regards both building and life safety.

Further, where a building continues to use combustible materials, clear and identifiable dutyholder(s) must take legal responsibility for the safety of the whole building.

Projects where building work has already begun should be taken on a case-by-case basis to assess the risk of the proposed/installed system and practicalities of making a change to the specification/installed system. However, the presumption should be that combustible insulation and cladding materials should not be used even where building work has already begun.

As above, where such a project continues to use combustible materials, clear and identifiable dutyholder(s) must take legal responsibility for the safety of the whole building and future building occupants must be informed prior to buying, renting or otherwise occupying the building (whether this be a residential, public or commercial space)

Question 7:

a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?

The primary elements affected would be combustible cladding and insulation materials, for which non-combustible alternatives are readily available.
We propose that non-substantive components with minimal ‘fuel source potential’ such as vapour barriers should be exempted from the proposed change.

b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?

No precise market data is available, but our own analysis suggests that prior to the Grenfell fire, the large majority of projects involving a cladding system (either new build or retrofit) involved systems using combustible insulation.

Since the Grenfell fire, a significant shift has taken place such that the majority of high-rise projects involving a cladding system (either new build or retrofit) are now using non-combustible insulation.

c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test is likely to be?

Non-combustible (Euroclass A-rated) solutions are readily available on the market, as is reflected in the market already switching to these solutions post-Grenfell.

d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)

In a direct comparison of material costs, the cost of non-combustible insulation over combustible insulation may add an additional 0.1% to the overall project costs, which include other materials, plant such as scaffolding and labour. We have commissioned an external review to provide a more detailed breakdown of costs and would be pleased to make this available to the Ministry when complete.
In addition, durable non-combustible insulation materials such as mineral wool are more straightforward to install properly, which may deliver higher in-use energy savings than less effectively installed and less durable materials.

e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains

Many countries already ban or restrict combustible materials for high-rise buildings.
In our experience, supply chains, product innovations, and other elements of the construction value chain naturally adapt to the legal and regulatory requirements in any given market.

For further information, please contact:

Sarah Kostense-Winterton
Executive Director
Mineral Wool Insulation Manufacturers Association (MIMA)
Email: sarah@mima.info
Tel: + 44 (0)20 7293 0870

12 September 2018

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 51

Respondent Details

	[redacted]
Name	
Position (if applicable)	
Organisation (if applicable)	
Address (including postcode)	
Email address	
Telephone number	
Please state whether you are responding on behalf of yourself or the organisation stated above	
Local contact for the organisation	

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	X*
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	* Manufacturer's Association

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	No – we agree however that ***some*** cladding systems should be banned, as explained in our detailed responses below
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved	N/A

Documents)?	
c. If no, how else could the ban be achieved?	N/A

Question 2	**Yes/No/Don't Know**
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	No
b. If no, to what height, higher or lower, should the ban apply? Explain why	A blanket ban on combustible materials should not apply.
c. throughout the entire height of the wall, i.e. both below and above 18m?	No
d. to high-rise residential buildings only?	No
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	No
f. Please provide any further information in relation to your answers above	We do not agree with a blanket ban on all combustible materials, but a targeted ban on cladding systems which do not adequately resist fire spread, as specified in Regulation B4 of Approved Document B

Question 3	**Yes/No/Don't Know**
a. Do you agree that the European classification system should be used?	Yes
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	No, A2 or better is not the only correct classification for materials to be used in wall construction.
c. If no, what class should be allowed in wall construction and why?	A2 or better is not the only correct classification for materials to be used in wall construction; there should be provisions in the regulations for the use of material combinations that have been tested in accordance with BS 8414 Parts 1 and 2 and classified in accordance with BR 135, since such combinations have been proven safe in large scale tests. Conversely, as shown in the example of the Grenfell tragedy, there is emerging

	evidence that systems deemed to meet the " Limited Combustibility " criteria in Approved Document B – nominally A2 or better - have failed large scale tests conducted in the UK and abroad. https://www.bbc.co.uk/news/uk-44748514 It also has to be noted that non-combustible (A2) mineral insulation systems, which contain a certain amount of combustible organic binder, may not pass the large-scale façade tests. One reason is that such systems are prone to smouldering over a longer period of time. It is therefore essential to provide adequate fire safety levels not by banning combustible materials but by making sure that all wall construction systems meet large scale testing to BS 8414.

Question 4	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	No
b. If no, what aspects of the wall should it cover?	N/A
c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	N/A
d. Please provide any further information in relation to your answers above	A prospective ban should not focus on individual elements of the wall construction, but rather on how the whole façade construction behaves in a fire. In other words, the target should be assemblies that have been proven by large scale testing ***not to adequately resist fire spread.*** In the context of the Grenfell tragedy, for example, the Government sponsored tests to BS 8414 on seven combinations of insulation and cladding core are highly instructive: these tests showed clearly that two of the seven combinations behaved very poorly compared to the other five in terms of fire spread.

To illustrate this point further, we have constructed the following table using data from the seven Government sponsored test reports :

DCLG Test no	1	2	3	4	5	6	7
ts (seconds)	390	314	1395	1290	1380	1325	1570
Peak temp. deg. C at Level 2, external	814	675	877	810	565	508	939

ts is the time taken in seconds to reach peak temperature after ignition of the crib used in the BS 8414 test. In the case of Tests 1 and 2 which were both conducted on ACM cladding with non flame retarded polyethylene core – the same type of cladding used on the Grenfell Tower - the peak temperatures of 814 and 675 degrees centigrade respectively were reached in only 5 to 7 minutes, with the tests then being terminated, whereas the remaining five combinations took at least 1290 seconds or 21 ½ minutes, as evident from the above table. Note that these ACM constructions contained either a flame retarded or a mineral core. To corroborate the point about ACM PE, we refer to Professor Luke Bisby's Stage 1 – Expert Report from the Public Inquiry, where he concludes that "the primary cause of rapid and extensive external fire spread was the presence of polyethylene filled ACM rainscreen cassettes in the building's refurbishment cladding system." The fact that Combinations 3 and 7 did not achieve the desired pass criteria as per BR 135 is more a testament to the stringent demands of the BS 8414 test rather than to nullify the argument about the inhibited fire spread .

Given the circumstances of the Grenfell tragedy, we do not need to over emphasise the value of an extra few minutes escape or intervention time

	in a developing fire situation. This series of BS 8414 tests have shown that **at least fifteen precious extra minutes would have been available** if any other combination of cladding and insulation had been used **,** other than the ACM with non-flame retarded polyethylene. Here again, we refer to Professor Luke Bisby's report, Section 2.5, on the role of flame retardants in inhibiting ignition and combustion and reducing the heat release rate. As such, a ban on "combustible insulation" would unjustifiably exclude product/s which have proven themselves to be versatile and safe over the years. The focus instead should be on targeting non-compliant wall construction systems through large scale testing to BS 8414 and by implementing the systemic changes recommended in Dame Judith Hackitt's report, including enforcement.

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	No
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	/
c. If no, what alternative way of achieving the policy aims would you suggest?	A prospective ban should not focus on individual elements of the wall construction, but rather on how the whole façade construction behaves in a fire. In other words, the target should be assemblies that have been proven by large scale testing ***not to adequately resist fire spread.*** For additional information, see answer to Question 4.

Question 6	**Yes/No/Don't Know**
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	/

b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	/
c. the ban should not affect projects where building work has already begun on site?	/
e. Please provide any further information in relation to your answers above	It is our view that a prospective ban should be limited to demonstrably non compliant materials such as the ACM PE and should apply in all the cases above, ie, (a), (b) and (c).

Question 7	**Free text answer**
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	PUR/ PIR and phenolic thermal insulation systems are likely to be affected.
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	Don't know
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	Don't know
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	Don't know
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	A blanket ban on "combustible materials" would exclude proven and safe materials and permit only a very limited number of products to be used which may perform less favourably with respect to environmental, mechanical and cost criteria. A ban would also constitute a

barrier to fair trade if not justified by the risk and thereby create a distortion in the construction marketplace.
FRE's position is that the Public Consultation on banning "combustible materials" in external façade is not commensurate with the risk as well as the emerging evidence from the Public Inquiry, some of which has been cited in our response above.
It is also encouraging to note that the consultation paper recognises the importance of issues other than fire safety such as energy efficiency. We would urge that such issues be factored into the decision making and a proportionate decision taken on this sensitive issue.

Question 8	**Free text answer**
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	/
Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	✓

Response 52

Respondent Details

Name	Nick Ralph
Position (if applicable)	Public Affairs Manager
Organisation (if applicable)	ROCKWOOL Ltd
Address (including postcode)	ROCKWOOL Ltd, Wern Tarw Road, Rhiwceiliog Pencoed, Bridgend, CF35 6NY
Email address	nick.ralph@rockwool.com
Telephone number	07970 142896
Please state whether you are responding on behalf of yourself or the organisation stated above	On behalf of ROCKWOOL Ltd

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	X
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	

Question 1	Yes/No/Don't Know
a. Do you agree that combustible materials in cladding systems should be banned?	Yes
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?	Yes
c. If no, how else could the ban be achieved?	N/A

Question 2	Yes/No/Don't Know
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	Yes
b. If no, to what height, higher or lower, should the ban apply? Explain why	We agree that the ban should apply to all buildings, both residential and non-residential, over 18m in height where multiple escape routes are in place. In addition, the ban should apply to all other buildings, both residential and non-residential, over 12m in height where single escape routes are in place. Further, the ban should apply to all high-risk buildings such as hospitals, care homes, schools, hotels, and entertainment venues, regardless of height.
c. throughout the entire height of the wall, i.e. both below and above 18m?	Yes
d. to high-rise residential buildings only?	No
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	Yes
f. Please provide any further information in relation to your answers above	A ban which incorporates all of the building types highlighted above is essential for multiple reasons, including: Occupants of all high-rise and high-risk buildings should enjoy no lesser standard of safety than those in residential buildings. There is a significant trend towards multi-purpose buildings as well as the conversion of office buildings to residential buildings around the UK. It is imperative that our buildings are future-proofed to allow for changing use over their lifetimes

	in a manner that ensures continued public safety. A multi-tier system introduces significant complexity which goes against the need for clear and straightforward public safety requirements. In addition to the above comments, we have submitted a separate, supplementary information paper. This paper includes detailed technical comments addressing the specific vulnerability of high-rise and high-risk buildings, the use of existing large-scale fire tests and the proposed definition of non-combustible materials.

Question 3	Yes/No/Don't Know
a. Do you agree that the European classification system should be used?	Yes
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	Yes
c. If no, what class should be allowed in wall construction and why?	N/A

Question 4	Yes/No/Don't Know
a. Do you agree that a ban should cover the entire wall construction?	Yes
b. If no, what aspects of the wall should it cover?	N/A
c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	Yes (see below)
d. Please provide any further information in relation to your answers above	We believe a ban should also cover window spandrels, balconies, brise soleil and similar building elements. The importance of this was highlighted most

recently by a fire which spread to four balconies at a block of flats in West Hampstead. However, as per our response to Question 5, we consider that specific, non-substantive components with minimal 'fuel source potential' could be exempted.	
Question 5	Yes/No/Don't Know
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Yes
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	Exemptions should be limited to non-substantive components with minimal 'fuel source potential'. We suggest that exempted components be included on an exemption list which clearly and unambiguously defines: the description of the exempted component and its specific, allowed purpose; its composition and fire performance (Euroclass, calorific content, etc); any limiting dimensions; the required certification of the exempted component; the quantity of exempted component that may be used; the allowed location of the exempted component and/or any prohibited locations; and any restrictions on how the exempted component may be used in combination with other materials, notably other exempted components. Components which should be reviewed under such a framework would include internal wallpaper and paint, window frames, gaskets and seals, vapour membranes, surface finishes and laminated glass.

c. If no, what alternative way of achieving the policy aims would you suggest?	N/A

Question 6	Yes/No/Don't Know
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	Yes
b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	Yes
c. the ban should not affect projects where building work has already begun on site?	No
e. Please provide any further information in relation to your answers above	N/A

Question 7	Free text answer
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	The primary elements affected would be combustible cladding and insulation materials, for which non-combustible alternatives are readily available. We propose that non-substantive components with minimal 'fuel source potential' such as vapour barriers should be exempted from the proposed change.
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	No precise market data is available, but our own analysis suggests that prior to the Grenfell fire, 80-90% of projects involving a cladding system (either new build or retrofit) involved systems using combustible insulation. Since the Grenfell fire, a significant shift has taken place such that approximately 20% of high-rise projects

	involving a cladding system (either new build or retrofit) are now using non-combustible insulation.
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	Non-combustible (Euroclass A-rated) solutions are readily available on the market, as is reflected in the market already switching to these solutions post-Grenfell.
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	In a direct comparison of material costs, the cost of non-combustible insulation over combustible insulation may add an additional 0.1% to the overall project costs, which include other materials, plant such as scaffolding and labour. We have commissioned an external review to provide a more detailed breakdown of costs and would be pleased to make this available to the Welsh Government when complete. In addition, durable non-combustible insulation materials such as mineral wool are more straightforward to install properly, which may deliver higher in-use energy savings than less effectively installed and less durable materials.
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	Many countries such as France and Germany already ban or restrict combustible materials for high-rise buildings. In our experience, supply chains, product innovations, and other elements of the construction value chain naturally adapt to the legal and regulatory requirements in any given market.

Question 8	Free text answer
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	We fully support a ban on the use of combustible materials in the external walls of high-rise residential buildings, and believe this should extend to all high-rise and high-risk buildings, such as hospitals and care homes, schools, hotels and sports arenas, where there may be challenges in exiting the premises regardless of their height. These high-rise and high-risk buildings should be clad and

	insulated with Euroclass certified A1 and A2 materials only. To support this, we should adopt a simple binary system with building materials classified as either non-combustible (Euroclasses A1 and A2) or combustible (Euroclasses B-F). Alongside addressing issues of combustibility, regulations should take account of the creation of toxic smoke during fires. Materials testing and classification should be introduced for toxicity, with stringent limits set on their usage which take account of the fatal dangers of toxic smoke in a fire. A ban of the scope outlined above is required to protect public safety as the currently allowed alternative route to demonstrating compliance using large-scale testing in accordance with BS 8414 is critically flawed. Evidence presented to the BSI by several parties including ROCKWOOL and the ABI identifies these flaws (please see attached supplementary paper). These concerns are further supported by various expert reports stemming from the Grenfell Inquiry. For example, Professor José L. Torero states: "Tests such as BS 8414 provide a single scenario deemed consistent with an external fire, a very limited number of measurements and a very simple failure criterion. The combination of these three characteristics does not provide a sufficiently comprehensive assessment of performance."

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	

Response 53

Respondent Details

Name	Carlton J Jones
Position (if applicable)	Director
Organisation (if applicable)	Metal Cladding & Roofing Manufacturers Association Ltd
Address (including postcode)	106 Ruskin Avenue, Rogerstone, Newport, NP10 0BD
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Telephone number	01633 895633
Please state whether you are responding on behalf of yourself or the organisation stated above	Metal Cladding & Roofing Manufacturers Association Ltd

	Select one
Please indicate whether you are applying to this consultation as:	
• Builder / Developer	
• Designer / Engineer / Surveyor	
• Local Authority	
• Building Control Approved Inspector	
• Architect	
• Manufacturer	
• Insurer	
• Construction professional	
• Fire and Rescue Authority representative	
• Property Manager / Housing Association / Landlord	
• Landlord representative organisation	
• Building Occupier	
• Tenant representative organisation	
• Other interested party (please specify)	Trade Association

13th September 2018

Building Regulations
Welsh Government
Rhydycar
Merthyr Tydfil
CF48 1UZ

Re: Banning the use of combustible materials in the external walls of high-rise residential buildings

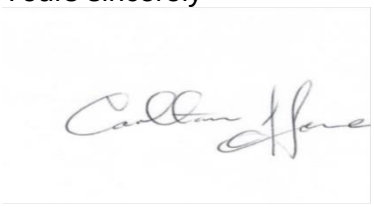
To the Building Regulations Team:

The MCRMA is a prominent trade association which represents the interests of members who manufacture and supply products and systems used in the façades of buildings. We are actively involved in the CPA/BuildUK/CIC Technical Expert Group (TEG) and their involvement in the Industry Response Group (IRG).

The MCRMA has advised its members to respond directly to the consultation document and we initially planned to provide a collated response. However, given the wide reaching technical and commercial interests of our members on this subject, we have found it difficult to establish a unanimous opinion.

The MCRMA and its member companies have considerable knowledge and depth of experience within the sector and we would be pleased to help further with any work items or indeed any other information that you think we may be able to provide.

Yours sincerely



Carlton J Jones
Director

Metal Cladding & Reefing Manufacturers Association Ltd
106 Ruskin Avenue Rogerstone Newport Gwent NP10 0BD
01633 895633 / info@mcrma.co.uk / www.mcrma.co.uk

Registration No 2502395
Registered Office: 42 Hight Street Flitwick Bedfordshire MK45 1DU

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 54

Respondent Details

Name	Douglas Haig Mathew Norman
Position (if applicable)	Managing Director Public Affairs & Policy Officer
Organisation (if applicable)	Residential Landlords Association Wales
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Telephone number	02920 027593
Please state whether you are responding on behalf of yourself or the organisation stated above	Residential Landlords Association Wales

	Select one
Please indicate whether you are applying to this consultation as:	
• Builder / Developer	
• Designer / Engineer / Surveyor	
• Local Authority	
• Building Control Approved Inspector	
• Architect	
• Manufacturer	
• Insurer	
• Construction professional	
• Fire and Rescue Authority representative	
• Property Manager / Housing Association / Landlord	
• Landlord representative organisation	
• Building Occupier	
• Tenant representative organisation	
• Other interested party (please specify)	Residential Landlords (Private)

Buidling Regulations,
Welsh Government,
Rhydycar,
Merthyr Tydfil

CF48 1UZ

13th September 2018

To whom it may concern,

Consultation Response on the 'Banning the use of combustible materials in the external walls of high-rise residential buildings' .

Thank you for the opportunity to respond to this consultation.

The Residential Landlords Association

The Residential Landlords Association (RLA) represents the interests of landlords in the private rented sector (PRS) across England and Wales. With over 30,000 subscribing members and an additional 20,000 registered guests who engage regularly with the Association, the RLA is the leading voice of private landlords. Combined, the RLA members manage over a quarter of a million properties.

The RLA provides support and advice to members and seeks to raise standards in the PRS through its code of conduct, training and accreditation. Many of the RLA's resources are available free to non-member landlords and tenants.

The Association campaigns to improve the PRS for both landlords and tenants, engaging with policymakers at all levels of Government to support its mission of making renting better.

Question One

a.Do you agree that combustible materials in cladding systems should be banned?

Yes we are agree with the Welsh Government that the BS 8414 test does not offer a straight forward way of meeting the requirements of the regulations. The RLA agrees that combustible materials on high rise buildings should be banned.

b.Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?

Yes, the RLA believes that the current guidance has no effect and therefore an implementation of the ban through a change of legislation would be the most prudent course of action.

c.If no, how else could the ban be achieved? n.a

Question Two

Do you agree that the ban should apply:

a.to buildings 18m or over in height? Yes

b.If no, to what height, higher or lower, should the ban apply? Explain why. N.A

c.throughout the entire height of the wall, i.e. both below and above 18m? Yes

d.to high-rise residential buildings only? Yes

e.If no, should the ban apply to high-rise non residential buildings, e.g. offices and other buildings, as well as residential buildings? N.A

We agree with the proposal to confine the ban to high rise residential buildings over 18 metres in height. However, it would still be appropriate if cladding were present to consider as part of the Fire Safety Risk Assessment as to whether measures need to be taken in the case of other residential type buildings such as hospitals.

Question Three

a.Do you agree that the European classification system should be used? Yes
b.If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction? Yes
c.If no, what class should be allowed in wall construction and why? N.A

Question Four

a.Do you agree that a ban should cover the entire wall construction? Yes
b.If no, what aspects of the wall should it cover? N.A
c.Should a ban also cover window spandrels, balconies, brise soleil and similar building elements? Yes

Our agreement relates only to new build or the carrying out of alterations including over cladding. We have concerns as to the impact of such a ban in terms of existing buildings where we do not consider that such an extensive ban would necessarily be appropriate. After all, the fundamental issue which has given rise to the current situation is over cladding; rather than the original construction of the building.

Question Five

a.Do you agree that a limited number of wall system components should, by

exception, be exempted from the proposed ban? Yes
b.If yes, what components should be included on an exemption list and what conditions should be imposed on their use?
We agree with the principles outlined in the consultation paper. Exemptions would be appropriate, where there is no practical alternative or there is minimal risk. Internal spread of flame is already addressed under the building regulations in any event. For instance, we would not expect such a ban to extend to internal wall paper and paints. Special consideration needs to be given to glazing. The RLA have carried out some research on this issue and find conflicting advice in relation to glass used in glazing. There is clearly an important consideration for new build properties in relation to thermal impact on glass in the event of fire breaking out. For new buildings we therefore find it appropriate that fire protected glazing should be required. However, there seems to be no reason why this is necessary in the case of window frames, gaskets and seals and window furniture; nor vapour membranes. Likewise, traditional external paints such as Weather Shield should be excluded. We have concerns about the general reference to surface finishes because this could permit flammable items as part of any exemption. Going forward, for new build, there seems to be the opportunity, subject to these exceptions, to impose an outright ban on materials which are not of limited combustibility.

With regards to the drafting of the proposed ban for new build, it would seem the most appropriate way forward would be to ban all items other than items of limited combustibility as part of the exterior subject to appropriate exemptions. There would also need to be an overriding proviso allowing the building control authority power to grant a dispensation subject to stringent safeguards where there is no practical alternative (in addition to any specified exemptions). This would then allow the opportunity for matters to be judged where necessary (exceptionally) on a case by case basis.

If no, what alternative way of achieving the policy aims would you suggest? N.A

Question 6

Do you agree that:

a.the ban should apply to proposed material alterations to existing buildings, including over cladding? Yes

b.the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site? Yes

c.the ban should not affect projects where building work has already begun? No

The RLA has concerns as indicated in our previous response above, that the real problem is around over cladding.

Where a project has not started, there is an opportunity to go back to the drawing board and redesign the new building to exclude external materials which are not of limited combustibility. The position is entirely different in the case of existing

buildings.

There are also two key related questions which the Government will need to consider. Firstly, meeting the cost of the works and secondly what happens to previously end of life buildings, which have been already over clad to address the deficiencies in these buildings?

As a representative body for private landlords flats in high rise blocks are often owned by our members and are rented out. As we have highlighted in our evidence to the Housing Communities and Local Government Committee's Inquiry, these buildings are currently effectively rendered worthless, where they have been over clad with ACM composite materials and other similar combustible materials.

There is also a division of opinion as to the requirements under current building regulations as presently drafted. In her expert evidence to the Grenfell Tower Public Inquiry, Dr. Lane, the Inquiry's Expert Witness, has taken the view on an outcomes based approach that the requirements of Schedule 1 to the Building Regulations 2010 (Regulation B4 relating to external fire spread) have not been met in respect of the alterations carried out to Grenfell Tower to install external cladding to the building. Strictly speaking, this is a perfectly permissible view but it overlooks the role played by Approved Document B (in line with the entire Approved Document system) as guidance to ensure compliance with the requirement set out in Schedule 1 to the regulations. After all, there is provision in the building regulations that there is a presumption that you meet the requirements in Schedule 1 if you follow the guidance set out in the relevant Approved Document. There is a difference of views as to whether the work carried out at Grenfell Tower (and other similar buildings) is compatible with this guidance and this is no doubt an issue which, in due course, the Public Inquiry itself may well have to resolve.

We take the view that the reality is that the building regulation system has broken down and is not fit for purpose in this respect. Successive Governments have allowed this situation to come about. We are strongly of the view that so far as the private sector is concerned that, because of this breakdown, unfortunately there should be means to compensate building owners who, as a result, must carry out work to remove existing non-compliant cladding in existing buildings and for the cost of replacing it.

Allied to this, as already indicated, the Government must, in our opinion, grapple with the question of what needs to be done in the case of existing buildings which were previously in effect life expired where cladding has played a key role in renovating those buildings. Cladding has played a very important role in making these buildings wind and water tight where their external structure has deteriorated since the time of original structure (often in the 1960s and 1970s) as well as providing essential upgraded insulation to provide better and warmer homes for residents. Cladding has played an important aesthetic role in improving the appearance of these buildings and therefore their general ambience, also making them a more attractive place in which to live.

The tragedy at Grenfell Tower has shown how difficult it is, particularly in

London, to find alternative permanent accommodation for those who would be displaced. If numerous formerly life expired buildings which had been improved by the use of cladding were now to be taken out of use the major crisis due to the lack of suitable alternative accommodation caused by the need to re-house survivors at Grenfell Tower would be greatly magnified across many parts of the country, to the detriment of residents. At the same time their health and safety must be protected, particularly to ensure that the ghastly events at Grenfell Tower are not repeated elsewhere.

Any replacement cladding in the case of existing buildings must be fit for purpose, properly specified, designed and installed, as well as providing the necessary measures of providing comfort and protection from the elements for those who live there. Nevertheless, as safety of residents must be paramount this work in the case of existing buildings is necessary where they have been over clad with unsuitable materials. We consider that in the same way as the Assembly is meeting the cost of works to be carried out where appropriate by local authorities and housing associations we believe that it is imperative that the same financial assistance is extended to owners of private buildings, particularly where there adversely affected in cost terms by retrospective changes to requirements under the building regulations. At the very least, as we have argued to the Housing Minister, Rebecca Evans AM, of favourable loan assistance should be provided so as to ensure that the cost is spread. Otherwise, we are left with the situation not only that residents are displaced but we have worthless buildings which can no longer be used. It may not always be technically feasible or economic to replace the cladding with alternatives that meet these requirements. Owners would then need to be compensated in our view for their losses, with mortgage lenders who have advanced mortgages on these buildings. Unfortunately, as already pointed out successive Governments have allowed this situation to develop.

We agree that it would be appropriate to apply the ban to alterations to existing buildings, particularly in the case of over cladding and also to projects that have not yet started. There is in the latter case then the opportunity to redesign them.

The issue around applying the ban to projects where building work has already begun is more difficult to address. We have disagreed with the proposition that the ban should not apply to them. The reality is that if these buildings are still to be covered in potentially combustible material who would want to buy them or live in them? We appreciate that this situation will differ depending on the stage which the works have reached at the time the ban takes effect. It would seem to us that if they are for example to be clad or are already clad in ACM then steps do need to be taken, retrospectively, to remove this material and replace it with material of limited combustibility. Issues then of compensation must also arise.

Question 7

a.Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?

The RLA doesn't hold the competency to grant a reply.

b.In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?

We would hope that builders and developers would recognise the problem and would now use materials which do meet Class A2. However, we are not able to give any information to assist in answering the question.

c.What is the impact of removing access to the BS 8414 for those buildings affected by the ban test is likely to be?

The RLA doesn't hold the competency to grant a reply.

d.How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)

The RLA doesn't hold the competency to grant a reply.

e.Please provide any further comments on the likely impact of this change for construction
e.g. supply chains

The RLA has none to provide. Regards,

Douglas Haig
Vice Chairman of the RLA
Managing Director of the RLA Wales

Mathew Norman
Public Affairs & Policy Officer
RLA Wales

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 55

Respondent Details

Name	[redacted]
Position (if applicable)	
Organisation (if applicable)	
Address (including postcode)	
Email address	
Telephone number	
Please state whether you are responding on behalf of yourself or the organisation stated above	

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	X
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	No
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?	No. Changes should come through Approved Document B to allow flexibility and to avoid stifling innovation (see c)
c. If no, how else could the ban be achieved?	[Free text answer] We do not see the need for a ban, but a better enforcement of regulation mechanisms and un-ambiguous guidance in Approved Doc B. With enforcement we mean that products

	meet claimed performance and when used in the application are compliant with the regulations related to the application. The new approach could be to ensure clear compliance with the current legislation, by introducing a more strict un-ambiguous prescriptive route (see 1.) and also by keeping the performance based route using BS 8414 (see 2.) 1. We know that systems comprising non-combustible / limited combustibility insulation/cladding can fail BS8414/BR135 tests, therefore BS8414 is a higher standard than allowing non-combustible / limited combustibility insulation/cladding. Therefore the materials based “linear” approach (the guidance provided between articles 12.6 to 12.9 in Approved Doc B volume 2) should be tightened to allow non-combustible insulation and cladding (A1) only. Reason: to achieve clear and un-ambiguous guidance. 2. Keeping a sound performance based option through BS8414 large scale testing for the complete façade system regardless of the classification of the façade components. With the DCLG programme and BRE large scale tests based on BS 8414 it was clearly shown which buildings in the UK were deemed fire safe and which were not. Further, since the beginning of the use of BS8414, there has not been a failure in the BS8414 approved façade systems. There is currently no evidence of a BS8414 compliant system, which failed. It should be noted that façade systems with A2 components may still need to be assessed according to BS 8414, to be sure that they are safe in case of fire. This approach solves the situation of non- compliance which may occur with

	the prescriptive route (see 1. of this answer) We also would like to remind the report of the independent review of building regulations and fire safety commissioned by the government and led by Dame Judith Hackitt. She recommended a new framework that includes a clear model of risk ownership, which is mainly outcomes-based (rather than based on prescriptive routes). It also considers buildings as a system, using a risk-based approach and ensuring transparency of information as well as an audit trail. Compliance and enforcement of regulations is essential for fire safety and Dame Hackitt showed this has not worked properly in England, where non-compliant products could find their way through the system. This should not happen and a simple ban would not resolve this problem. We invite the government to follow the recommendations of Dame Hackitt to fix the whole system.

Question 2	Yes/No/Don't Know
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	No
b. If no, to what height, higher or lower, should the ban apply? Explain why	We do not see the need for a ban. If the Government goes ahead with a ban, then it should be only for buildings over 10 storeys. The reference is in the Hackitt report, which stated that buildings of 10 storeys or more have a greater risk of serious consequences than anything lower. Current fire fighter equipment can reach up till this height.
c. throughout the entire height of the wall, i.e. both below and above 18m?	No
d. to high-rise residential buildings only?	No
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	No
f. Please provide any further information in relation to your answers above	[Free text answer] We can support that buildings above 18 m are treated differently from those below 18 m, but we do not see the need for a ban, but rather a better enforcement mechanism and un-ambiguous guidance in Approved Doc B as indicated in the answer to Question 1.

Question 3	Yes/No/Don't Know
a. Do you agree that the European classification system should be used?	Yes
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	1. class A1 for the prescriptive route. 2. BS 8414 should remain possible as part of a performance based route alongside the prescriptive approach. Façade systems with A2 components

	may still need to be assessed according to BS 8414, to be sure that they are safe in case of fire.
c. If no, what class should be allowed in wall construction and why?	[Free text answer] We stress the importance of a performance based approach using BS8414 to enable a full system assessment.

Question 4	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	No
b. If no, what aspects of the wall should it cover?	We do not see the need for a ban, but a better enforcement mechanism and un-ambiguous guidance in Approved Doc B. However, if a ban is introduced then this should be restricted to the outer cladding panels in rainscreen applications only, since witness reports to the Grenfell Inquiry have clearly indicated that the ACM was the most significant contributor to fire spread. Additionally the Government's fire adviser Sir Ken Knight has expressed his views that any ban should be limited to the outer panels (see here). It will be enormously difficult for the Government to decide which elements of a cladding system should be included and excluded without over complicating the situation. Will it extend to windows, membranes and fixings? Where will the line be drawn and by whom and how will this be enforced?
c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	No
d. Please provide any further information in relation to your answers above	[Free text answer] Spandrels, balconies, brise soleil and similar building elements should be tested according to an appropriate performance standard.

Question 5	Yes/No/Don't Know
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Yes
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	[Free text answer] We repeat, we do not support a ban, but if the Government does so then it should only cover the external cladding panels in ventilated rainscreens. Everything else should be exempted. We support following a more strict and un-ambiguous prescriptive route + a performance based route based on BS 8414 system testing (see answer 1c). Combustible wall system components can be approved following BS 8414 testing of the façade system.
c. If no, what alternative way of achieving the policy aims would you suggest?	A full performance based approach including BS8414 to include the full details of the construction for all systems irrespective of material classification Since the Grenfell tragedy, we have not come across any evidence of fires that have progressed out of control in buildings with systems that would comply with BS 8414. The testing of complete systems to BS 8414 is the most robust way to regulate the performance regardless of whether components are combustible or non-combustible. We already know from the Government's own BS 8414 tests that systems can fail, and in the case of the façade system used on Grenfell Tower, this failed very early on, in fact within only a few minutes.

Question 6	Yes/No/Don't Know
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	No
b. the ban should extend to projects that have been notified before the ban takes	No

effect but work has not begun on site?	
c. the ban should not affect projects where building work has already begun on site?	Yes
e. Please provide any further information in relation to your answers above	[Free text answer] A risk based approach should be used to evaluate the compliance of existing buildings to building codes and regulations. We do not agree with a ban. Enforcement and compliance of buildings with the regulation is a corner stone of the approach. A holistic, test data-based and performance-oriented approach is needed when looking at how to best evaluate existing buildings. Fire safety of buildings depends on various elements and therefore requires a holistic approach that addresses both prevention and construction design for fire protection. Prevention focuses on avoiding fires, whereas construction design includes fire performance of material and system solutions for the building and its envelope. In that regard, fire-safe buildings need construction materials and products to be approved, installed and maintained responsibly and in accordance with all regulations. Fire safety in high-rise buildings in particular requires a holistic approach. It begins with a careful and responsible building design with a performance-based approach, followed by rigorous execution and maintenance. It also includes early detection and suppression systems, as well as prevention measures based on awareness and evacuation training.

Question 7	Free text answer
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	Fire test report 5: non-combustible cladding (ACM(A2)) + PIR insulation gave a clear pass in the BS 8414 test, even though the PIR insulation does not meet class A2 as an insulation material. Fire test report 5 , Advice note 8 - Advice for building owners: large-scale wall system test 5 - 14 August 2017 This façade system would be banned if BS8414 would be deleted. System testing (cladding + insulation) reflects fire performance as applied in the building (and therefore is close to the actual performance in use), whereas single product testing alone does not. The same would be true of many other systems that contain insulation materials and cladding panels that have product performance worse than A2/limited combustibility but are used in systems that pass BS8414
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	We do not have this information - apart from the study which the government has been doing in assessing public buildings known as the building safety programme https://www.gov.uk/guidance/building-safety-programme#history This document shows that there were no buildings identified comprising only components of class A2 or better.
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	Key façade systems solutions would not be possible anymore, for example those based on PIR and phenolic insulation (these insulations currently can be used in a system with A2 cladding in front when they meet BR135 criteria after testing to BS8414). These insulations are light weight and provide the best insulation value. They are key in meeting current and future (more stringent) energy efficiency targets. The professionalism of architects and the increasing requirements for energy savings have resulted in a growing demand for performing construction

	products which can provide this while meeting relevant fire requirements. Facades systems would become much thicker as the insulation would need to be twice as thick. This leads to structural problems and more expensive construction. In addition the energy performance and general comfort (e.g. day light, smaller spaces, etc.) will still not be of the same quality. As the government has set ambitious targets on energy efficiency improvement by 2030, these targets cannot be met with non-combustible insulation.
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	

Question 8	**Free text answer**
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	It is already evident that many buildings currently do not comply with regulations and that inspection and compliance issues are not dealt with consistently, if at all. A key emphasis needs to focus on how regulations can be enforced and penalties applied where there is evidence of non-compliance. If a ban is imposed, how will Government respond to occupants who feel their building is not safe if it is not altered to meet the ban? This could bring with it potentially huge retrospective costs which the Government would need to meet if such a building was originally built or refurbished to an agreed set of standards. A ban would introduce all kinds of

	complexities and bring with it a whole set of unintended consequences. It would send out mixed messages to insurers and to mortgage providers. How will the Government address any costs needed to redesign and re-specify products?

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:** **X**

Response 56

Respondent Details

Name	Jason Lear
Position (if applicable)	Team Leader, Building Control
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Email address	learj@caerphilly.gov.uk
Telephone number	01443 858958
Please state whether you are responding on behalf of yourself or the organisation stated above	Responding on behalf of Caerphilly County Borough Council.

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	X
Building Control Approved Inspector	
Architect	
Manufacturer	
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	Yes, but all materials used in construction should be considered in relation to risk and eliminating that risk or reducing to manageable levels. As identified in later questions it is not possible to eliminate all combustible materials in an external wall.
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?	Yes
c. If no, how else could the ban be achieved?	[Free text answer]

Question 2	Yes/No/Don't Know
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	Yes
b. If no, to what height, higher or lower, should the ban apply? Explain why	
c. throughout the entire height of the wall, i.e. both below and above 18m?	Yes. Any change in law or guidance should relate to the entire height of the building, not just that portion over 18m.
d. to high-rise residential buildings only?	No
e. If no, should the ban apply to high-rise non-residential buildings e.g. offices and other buildings, as well as residential buildings?	Yes. Application of regulations to future change of use may be compromised if the ban is not applied to all types of high-rise buildings.
f. Please provide any further information in relation to your answers above	[Free text answer]

Question 3	Yes/No/Don't Know
a. Do you agree that the European classification system should be used?	Yes
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	Yes
c. If no, what class should be allowed in wall construction and why?	[Free text answer]

Question 4	Yes/No/Don't Know
a. Do you agree that a ban should cover the entire wall construction?	The consultation acknowledges that a ban or restriction cannot cover the entire wall construction.
b. If no, what aspects of the wall should it cover?	All parts of a wall construction must be subject to scrutiny and appropriate testing. Composite components must be subject to test in appropriate circumstances. Tests involving

	encapsulated materials that may in themselves not satisfy a test of combustibility should be appropriate, relevant and the materials be unambiguously specified and recognisable.
c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	Yes. Any restrictions should cover these elements
d. Please provide any further information in relation to your answers above	[Free text answer]

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Yes.
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	Where there is recognised difficulty in providing a component that meets any restrictive requirement, it should be shown by suitable test that that component does not contribute to the spread of fire or compromise the construction in terms of fire safety.
c. If no, what alternative way of achieving the policy aims would you suggest?	

Question 6	**Yes/No/Don't Know**
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	Yes.
b. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	Yes. We have experienced introduction of changes in legislation many times in the past, where developers will submit applications before a deadline in order to avoid meeting new or more onerous requirements. To be effective any change must be applied to any work not substantially commenced.
c. the ban should not affect projects where building work has already begun on site?	There are commercial merits in the ban not applying to projects which have already started however, future changes

	of use could be compromised.
e. Please provide any further information in relation to your answers above	[Free text **answer**]

Question 7	**Free text answer**
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	
b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	No high rise buildings in Caerphilly, therefore, unable to provide feedback.
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	Paragraph 4 of this consultation states "The Welsh Ministers stand by the advice issued by the UK Government Expert Panel that wall systems that have met BS 8414 can be considered to be safe" It would therefore be considered unreasonable to change this position without further evidence.
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the current requirements? (Please provide any further details)	As b, above.
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	

Question 8	**Free text answer**
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 57

Respondent Details

Question 1	**Respondent details**
Name	David Poxon
Position (if applicable)	Practice Principal
Organisation (if applicable)	Fire Protection Association
Address (including postcode)	London Road, Moreton-in-Marsh, Gl56 0RH
Email address	dpoxon@thefpa.co.uk
Telephone number	01608 812 500
Please state whether you are responding on behalf of yourself or the organisation stated above	On behalf of the above organisation

Question 2	**Select one**
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer /Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier/ Resident	
Tenant representative organisation	
Other interested party (please specify)	UK's National fire safety organisation

Question 3	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	Yes.
b. Should the ban be implemented through changes to the law?	Yes, if the intention is to ensure that the non-combustible requirement also applies to alternative approaches such as the use of BS 9999 or a fire safety engineering approach.
c. If no, how else could the ban be achieved?	N/A

Question 4	**Yes/No/Don't Know**
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	Yes, to a point. The limit of 18m needs to be reviewed in relation to the original principal behind the dimension and todays built environment including any adverse impact that increased height may have on evacuation. A reduction in trigger height for non-combustibility of external wall cladding from 18m to 11m is being considered for Scotland. 11m is the height the fire service is expected to reach from a ground level mounted water jet.
b. throughout the entire height of the wall, i.e. both below and above 18m?	Yes, Persons escaping from levels above 18m will still need to travel through the 18m section to reach ground level. A fire on the exterior up to the height of 18m has the potential to affect the floors above (fire, heat, smoke and toxic species ingress). The area immediately outside the building, particularly fire exits, may also be affected by falling debris and flaming droplets. Ingress and spread of fire from external sources to involve combustible cladding will also be a risk from car and bin fires in close proximity to building curtilage.
c. to high-rise residential buildings only?	No.
d. to all high-rise, non-residential buildings e.g. offices and other buildings, as well as residential buildings?	Yes, however there are other purpose groups such as care homes, hospitals, hotels, mixed use buildings and similar where it may be appropriate to control the fire properties of the external cladding even though they may not fall within the definition for high-rise. Applying it to all such buildings will also help reduce the impact if there is a change of use.
e. Please provide any further information in relation to your answers above.	See full comments in A, B and D above regarding:

	The need to revisit the 18m height criterion The need to apply the ban to the entire building when a building is over 18m high The need to apply the ban to other purpose groups, including certain groups below 18m high

Question 5	**Yes/No/Don't Know**
a. Do you agree that the European classification system should be used and do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	Yes, as long as the classification is applied to the individual materials of each component and sub-component of external wall construction. This includes to each individual material of the components / and their sub-components of built-up systems.
b. If no, what class should be allowed in wall construction and why?	N/A

Question 6	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	Yes.
b. If no, what aspects of the wall should it cover?	N/A
c. Should a ban also cover window spandrels, balconies, brise soleil, and similar building elements?	Yes.
c. Please provide any further information in relation to your answers above.	Improved guidance is required on where walls start and finish. This may be obvious on clad masonry buildings but less obvious on some types of buildings employing modern methods of construction where there is no defining passive barrier such as a brick wall.

Question 7	**Yes/No/Don't Know**
a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?	Yes.

b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	Small combustible fixings that, by merit of size and spacing will not promote fire spread. Should NOT include vapour barriers or membranes capable of rapid fire spread that may defeat cavity barriers by spreading faster than the cavity barrier can respond.
c. Would you recommend an alternative way of achieving the policy aims stated above?	Individual testing of materials of components / sub-components supported by large scale built up system testing.

Question 8	**Yes/No/Don't Know**
Do you agree that:	
a. a risk-based approach is appropriate for existing buildings?	Yes.
b. the ban should apply to alterations to existing buildings, including over-cladding?	Yes.
c. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?	Don't Know. See 8e below.
d. the ban should not affect projects where building work has already begun?	Don't Know. See 8e below.
e. Please provide any further information in relation to your answers above.	The HC&LG Committee 'next steps' report (16/07/18) states…. *The Government was right to signal its intention to ban the use of materials which are not of limited combustibility in the cladding of high rise buildings. However, the ban should apply not only to new high rise residential buildings but also to existing buildings and those under construction. The ban should also apply to non residential buildings where there is a particular risk to life such as residential homes, hospitals, student accommodation and hotels.* The FPA supports this statement.

Question 9	Free text answer
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	Insulation, Cladding, vapour barriers and membranes, substrates, sheathing, battens, finishes and ACM.
b. We understand that since the Grenfell tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. How frequently are elements which do not meet the proposed requirement, as identified in question 3, currently being used on buildings in scope?	Don't Know.
c. What the impact of removing access to the BS8414 for those buildings affected by the ban test is likely to be?	Loss of confidence of performance as a built-up system and integrity under fire conditions.
d. What types of buildings 18m or over are likely to be affected by this change (e.g. hotels, residential, student accommodation)? What proportion of each type would likely be affected by the proposed change?	Hotels, residential care, student accommodation, healthcare, mixed occupancies, residential over commercial units, residential over hotels.
e. How much extra cost would typically be involved in meeting the proposed new requirements over and against a building which meets the current requirements? (Please provide any further details.)	Don't Know.
f. Please provide any further comments on the likely impact of this change for construction (e.g. supply chains)	Safer building sites due a reduction in combustible building materials on site. Reduced utilisation of plastics. Reduced through-life degradation of building safety.

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	**Please tick here:**

Response 58

Building Regulations
Welsh Government
Rhydycar
Merthyr Tydfil
CF48 1UZ

Re: Response to Welsh Government consultation on "Banning the use of combustible materials in the external walls of high-rise residential buildings"

Dear Building Regulations Team,

Please find enclosed, Kingspan Group's ("Kingspan") response to the consultation on "Banning the use of combustible materials in the external walls of high-rise residential buildings". This letter provides the wider context of our submission and should be read in conjunction with our enclosed response.

Kingspan fully supports the Welsh Government's objective of improving the safety of building occupants in the event of a fire and welcomes any measures which can deliver more robust and effective regulations, including clearer guidance and better oversight, in order to achieve this.

Kingspan is the world's largest manufacturer of cladding and insulation products, including a significant business in the UK, with over 3,000 employees operating across 19 UK facilities. Our product suites include modern high-performance insulation solutions (comprising so-called "combustible" materials), as well as traditional mineral fibre (so-called "non-combustible") products. In this regard, we think it is important to point out that the applications and products that would be impacted by a ban on combustible materials of the nature proposed by the Welsh Government's consultation would represent significantly less than 1% of Kingspan's turnover.

We have conducted more than 1,800 external fire tests to national and international standards in recent years and believe that we have carried out more product and full system fire safety tests than any other construction material company. We know from this extensive independent testing and research that fire performance is a complex science and that systems containing so-called non-combustible and limited-combustibility materials cannot be automatically assumed to adequately prevent fire spread. Conversely some modern high-performance (combustible) insulation systems can perform as well as systems that feature insulation that is classified as 'non-combustible'. This is because "combustible" does not necessarily also mean "flammable".

Fundamentally, Kingspan believes that an outcomes based approach to regulations, rather than a prescriptive approach, together with systemic reform to ensure buildings are built, maintained and managed correctly, is the best way to

improve the safety of building occupants in the event of a fire.

Therefore, we fully support Dame Judith's statement that "The new regulatory framework must be simpler and more effective. It must be truly **outcomes-based** (rather than based on prescriptive rules and complex guidance) and it must have real teeth, so that it can drive the right behaviours".

In order to meet these standards, Kingspan is firmly of the view that all cladding systems should be tested as complete systems in their intended configuration. Large scale system testing is the appropriate and internationally recognised way to address the complex issue of how different elements interact with each other, and BS8414 is widely regarded as the gold standard fire test.

There is a wide spectrum of performance of combustible, limited combustibility and non-combustible cladding materials. We fully agree that some of them should not be used in high-rise residential buildings and in our view BS8414 is the best way of screening them, as systems incorporating unsafe materials simply will not pass this rigorous test. This was clearly demonstrated by the Ministry of Housing, Communities and Local Government Building Safety Program BS8414 tests, where both systems featuring PE-cored ACMs (one with non-combustible insulation and the other with combustible insulation) failed catastrophically. Of the 474 buildings identified by MHCLG as having ACM cladding systems similar to those which failed the Government's large-scale system tests, there is no evidence to suggest any of them were BS8414 tested, and furthermore Kingspan is not aware of a building anywhere in the world where there has been an out of control cladding fire where the system has passed, or would pass, a BS8414 test. We believe this shows that BS8414 is an effective test which should be applied to all cladding systems.

Furthermore, Kingspan is aware of systems that feature A1 non-combustible insulation materials and A2 limited combustibility rainscreens which have failed BS8414 but would be automatically permitted on buildings under the proposals put forward in the consultation. We believe that effective regulation should similarly prevent such systems from getting built. For this reason, banning classes of materials is not an effective way to achieve the goal of improving the safety of building occupants in the event of a fire. Kingspan considers the reliance on product classifications alone as fundamentally flawed, as this prescriptive approach does not automatically result in systems that prevent fire spread. This is why we have consistently stated that in order to ensure the safety of building occupants in the event of a fire, all systems should be tested to BS8414 and meet the requirements set out in BR135.

We would refer you to the annex to this letter, which details the rationale, testing, and research that underpins this submission, and in which we make the following points:

"Combustible" does not mean "flammable";
Product testing does not ensure system safety;
Product combinations that are proposed to be permitted can yield unsafe systems;
Product combinations that are proposed to be banned can yield safe systems;
BS8414 is a robust test and widely adopted in other countries;
PE-cored ACMs are unsafe - but they are already non-compliant;

The proposal to ban materials will not guarantee safer buildings.

Kingspan is committed to working towards a safer building environment. In the past year, we have significantly increased our programme of fire testing and our investment in CPD fire training, as well as publishing all our BS8414 test reports (both passes and fails) on our website. Given the importance we place on full scale fire testing to establish fire safety, and our significant concerns around the use of the linear (untested) route for non-combustibles, we will be continuing these programmes across our range of combustible and non-combustible product suites.

We hope that this submission will assist the Welsh Government in the formation of public policy so that a tragedy such as that which took place at Grenfell Tower will not occur again.

Yours sincerely,

_____

RICHARD BURNLEY
Managing Director
Kingspan Insulation Ltd UK & Ireland

ANNEX

"Non-combustible" does not mean non-flammable

Classification as "non-combustible" and "limited-combustibility" relies on the determination of the gross calorific value of a product, not on its flammability - i.e. it is a measure of the organic content of a product.

"Combustibility" and "flammability" are not the same. Materials that are "combustible" are not all "flammable".

In reality there is a huge range of performance in "combustible" materials, from those that perform to all intents and purposes the same as "non-combustible" to those that are highly flammable.

Prof Luke Bisby, the independent expert to the Grenfell Tower Inquiry, has stated in his evidence to the Inquiry:

"*In reality, for materials that have the potential to burn, by which I mean those materials that are combustible, flammability is a relative rather than an absolute property. Depending on the circumstances therefore, combustible materials can either be more or less flammable, and this distinction is actually very important*[1]", and later

"…*just because a material can burn under some circumstances doesn't necessarily mean that it will burn under a particular set of circumstances, and this idea will be familiar to anyone who has attempted to start a log fire without using kindling*[2]."

Another example is Glulam (a glued laminated timber product used as a structural support in buildings) which is often used as a structural frame instead of steel. Whilst Glulam is deemed combustible and steel non-combustible, it is well documented that Glulam has superior fire properties to steel, in that at high temperatures steel will melt and buckle resulting in structural failure of a building whereas the Glulam chars but can retain its structural properties for longer.

Product testing does not ensure system safety

'Non-combustible', 'limited combustibility', 'Class 0' and 'Class 1' classifications of insulation and façade materials are made solely through small scale tests on isolated product samples[3].

The tests that define a product as non-combustible by burning a small sample of material (less than 5cm cubed or 50g) without seeing how it performs in combination with other materials used on the façade. It is self-evident that the BS 8414 test of the full system – which involves exposing an 8 - 9 metre build-up of the proposed façade to extreme heat and flames - is a far more rigorous and realistic approach to ensure fire safety.

Moreover, in practice there can be hundreds of combustible components in a cladding system including breather membrane, breather membrane tape, cement particleboard tape, mineral fibre binder, paint coatings etc. and can include runs of combustible materials such as tape or gaskets which can create fire spread.

Currently, so-called non-combustible/limited combustibility façade systems are deemed to comply under the linear-based route to compliance[4], without any testing as to how the system (including its combustible elements) would perform in real life.

Reliance on simplistic classification of individual products is not sufficient. Product classifications say nothing about how one material will perform when combined with another as part of a complete system. For example, product classifications do not account for an airspace or a ventilation gap or other parameters that affect how materials will perform when combined in a system.

We believe that the focus on the performance of individual products is misleading and does not necessarily provide a safe solution. Dame Judith Hackitt states in her report *"The debate continues to run about whether or not aluminium cladding is used for thermal insulation, weather proofing, or as an integral part of the fabric, fire safety and integrity of the building. This illustrates the siloed thinking that is part of the problem we must address. It is clear that in this type of debate the basic intent of fire safety has been lost."*

Because of the "deemed to comply" linear route, there is a lack of published information on the performance of facade systems that comprise non-combustible / limited combustibility insulation and cladding panels. Kingspan has published all of our BS8414 test reports, both passes and fails.

In our view, all cladding systems (including those featuring so-called "non-combustible"/"limited-combustibility") should be tested to BS8414 as complete systems in their intended configuration in

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Transcripts Wed 20 June 2018, Page 19: 18-25.

Transcripts Wed 20 June 2018, Page 25: 3-7.

[3] Based on BS 476-4, -6, -7 & -11 / BS EN ISO 1182, 1716 & 11925-2 / BS EN 13823

Approved Document B, [paragraphs 12.6 and 12.7].

order to ensure consistency in outcomes. Anything short of whole system testing does not achieve the Welsh Government's objective of improving the safety of building occupants in the event of a fire.

Systems tested to BS8414 provide a fundamentally higher benchmark than so-called "non- combustible"/"limited-combustibility" product classifications.

Permitted product combinations can yield unsafe systems

Systems comprising so-called "non-combustible" and "limited-combustibility" insulation and/or cladding materials have failed to meet BR 135/BS8414 criteria:

FAILED Test 1 - This test was conducted at BRE on 27th October 2016. This system comprised Alucopanel solid core A2 ACM along with Fujairah Rockwool foil faced mineral fibre/stone wool insulation, rated as A1. The system failed on flame height which can be seen on a high resolution video which is enclosed herewith.

FAILED Test 2 - This test was conducted in Australia on 6th March 2018. The system comprised an Alpolic solid core A2 panel in combination with Rockwool mineral fibre/stone wool. The test used was AS5113 which is identical to the method used for BS 8414, but with different pass/fail criteria. Nonetheless, if the BR 135/BS8414 criteria were applied to the test data, the system would have failed. A copy of the report is enclosed, which
evidences that the temperature shown on the thermocouples exceeded 600 degrees C for over 5 minutes (far longer than the permitted 30 seconds).

FAILED Test 3 - This test was commissioned by Kingspan and carried out at Exova in Dubai on 2nd July 2018. The system comprised Rockwool DuoSlab (which is rated A1) and Vitracore G2 (which is rated A2). The construction of the test rig was a replica of the Ministry of Housing, Communities and Local Government tests conducted immediately after the tragedy at Grenfell Tower. The test failed on the basis of thermocouple data which is detailed in the enclosed BR135 classification report from Exova.

Despite failing these tests, the products used in these systems are A1 and A2 and would therefore be exempt from the Welsh Government's proposals on banning the use of combustible cladding.

Systems comprising so-called "non-combustible"/"limited-combustibility" insulation materials have been involved in major fires around the world, including:

The Lacrosse Building, Melbourne
Thorn House Hotel, Rostov on Don
Polat Tower, Istanbul

Other product combinations can yield safe systems

Deeming all "combustible" materials as unsafe, or contributing to fire spread, is incorrect.

For example, thermoset insulation materials (such as PIR and phenolic foams) char when exposed to heat/fire and self-extinguish when that heat/fire source is removed. They may be "combustible" but they are not "flammable".

Many cladding systems incorporating thermoset insulation materials have passed BS8414, which, as set out below, is widely regarded as setting a high benchmark, despite not being classified as "non-combustible" or "limited-combustibility".

This shows that such materials, when incorporated as part of a given cladding system, can pass stringent fire safety tests and resist fire spread and that there is therefore no need for a blanket ban on all "combustible" materials in order to improve the safety of building occupants in the event of a fire.

BS8414 is a robust test and widely adopted in other countries

The BS8414 test is designed to replicate a fire starting inside a room, breaking out through a window of a multi-storey building and exposing the external cladding to fire. It is designed to evaluate the rate and extent of fire spread within a cladding system.

The BS8414 is a robust test that has been adopted (or a variant thereof) by many countries worldwide. A recent report by Tenos International Fire Engineering Consultants has concluded that BS8414 has a higher fire load than the other internationally used large scale cladding test, NFPA 285, and that its fire load is already higher than that seen in test experiments reflecting real life scenario fires.

Large-scale full system fire tests are also used to regulate the performance of cladding systems in the UAE, Australia, USA, France, Sweden, New Zealand, China and Canada[5].

Kingspan is not aware of a building anywhere in the world where there has been an out of control cladding fire where the system has passed, or would pass, a BS8414 test.

PE-cored ACMs are unsafe - but they are already non-compliant

According to Professor Luke Bisby's evidence to the Grenfell Inquiry: "*The primary cause of rapid and extensive external fire spread [on Grenfell Tower] was the presence of polyethylene filled ACM rainscreen cassettes in the buildings refurbishment cladding[6].*"

We understand that all of the recent notable out-of-control high-rise fires worldwide detailed above have involved PE-cored ACM.

Sir Ken Knight, in evidence to the Housing, Communities and Local Government Select Committee on Wednesday 27th June, stated that PE-cored ACM is already banned under existing Building Regulations. He also suggested in a letter to the Committee dated 2nd July that "*It may therefore be worth considering if the banning of cladding materials might more appropriately be narrowly focussed on 'banning' the use of ACM PE (and any similar polyethylene core composite material) on the external face of a building".*

We fully agree that some products should not be used in high-rise residential buildings and in our view full system testing is the best way of screening them, as systems incorporating unsafe materials simply will not pass this rigorous test.

This was clearly demonstrated by the MHCLG Building Safety Program BS8414 tests, where both systems featuring PE-cored ACMs (one with non-combustible insulation and the other with combustible insulation) failed catastrophically.

This conclusion is further supported by the fact that of the 474 buildings identified by MHCLG as having ACM cladding systems similar to those which failed the Government's large-scale system tests, there is no evidence to suggest any of them were BS8414 tested.

Banning materials will not deliver safer buildings

The Welsh Government's proposed ban on "combustible" materials will not guarantee safer buildings.

Dame Judith Hackitt, in her report, also called for an outcomes or risk-based regulatory regime (and did not advocate banning specified materials). A similar report in Australia, commissioned by the Building Ministers' Forum and published in April 2018, by Professor Peter Shergold & Ms Bronwyn Weir also calls for a performance based approach to Australian building regulation.

The fire safety of any building depends on correct design and proper installation of the materials used. Incorrect installation will create a significant fire risk regardless of whether the materials are combustible or so-called "non-combustible"/"limited combustibility".

However, we should neither accept nor assume the inevitability of poor build quality. We don't tolerate poor quality in other safety critical aspects of modern life

where we require the entire system to pass performance safety tests, and not just individual parts (e.g. motor cars and consumer goods). Building safety should be treated no differently.

We agree with Dame Hackitt that the system by which we construct, maintain and manage buildings needs fixing, and without systemic reform buildings will still fail to meet the required performance standard.

Kingspan recognises that the cultural change identified by Dame Hackitt will require time. However, we believe that subjecting all cladding systems to large scale testing and the introduction of a Building Control taskforce that is trained and mandated to ensure the compliance of work on high rise / risk buildings, would be important short-term interventions.

We are concerned that a ban on combustible building materials fails to deliver the comprehensive systemic reforms based on an outcomes based approach that is necessary to improve the safety of building occupants in the event of a fire.

The USA, UAE and New Zealand use the NFPA285 (although the BS8414 has a more onerous fire load and higher heat flux), and in Australia the test use is the AS5113 (which is identical to the BS 8414 but with different pass/fail criteria).
Prof Luke Bisby, Phase 1 Expert Report 3:14

Respondent Details

Name	**Richard Burnley**
Position (if applicable)	**Managing Director**
Organisation (if applicable)	**Kingspan Insulation Ltd UK & Ireland**
Address (including postcode)	**Torvale Industrial Estate, Pembridge, Leominster HR6 9LA.**
Email address	**richard.burnley@kingspan.com**
Telephone number	**+44 1544 388601**
Please state whether you are responding on behalf of yourself or the organisation stated above	**Responding on behalf of the Kingspan Group**

	Select one
Please indicate whether you are applying to this consultation as:	
Builder / Developer	
Designer / Engineer / Surveyor	
Local Authority	
Building Control Approved Inspector	
Architect	
Manufacturer	✓
Insurer	
Construction professional	
Fire and Rescue Authority representative	
Property Manager / Housing Association / Landlord	
Landlord representative organisation	
Building Occupier	
Tenant representative organisation	
Other interested party (please specify)	

Question 1	**Yes/No/Don't Know**
a. Do you agree that combustible materials in cladding systems should be banned?	1.We do not agree that the Welsh Government should proceed with a ban on combustible materials as there is no clear evidence that this will achieve the Welsh Government's objective of improving the safety of building occupants in the event of a fire. 2.Kingspan fully supports the findings of Dame Judith Hackitt's Review of Building Regulations and Fire Safety. We note that Dame Judith specifically advises against a ban when she says on page 7 that *"The new regulatory framework must be simpler and more effective. It must be truly outcomes-based (rather than based on prescriptive rules and*

	complex guidance) and it must have real teeth, so that it can drive the right behaviours'. *2.1.* Dame Judith goes on to state that *"The overarching approach to delivering effective regulations and guidance must be that buildings are a system, and the guidance should support those undertaking building work to consider how the different objectives can be achieved as a coherent whole. The suite of guidance should be more user-friendly to facilitate a systems approach to meeting building safety objectives"* 2.2. She also states on page 115 that "*Regulatory frameworks that are overly reliant on prescription may fail to provide the expected level of safety, because if this assumption is incorrect, the output will be compliant with the prescription, but not safe."* 3.Kingspan's position is that the most rigorous way of ensuring that cladding systems do not promote fire spread is to assess how materials perform when they are combined in a cladding system (as they would be on a building) through a large scale fire test. We believe that what is vital is assessing how materials perform when they are combined in a cladding system, not the classification given to individual materials themselves. Unsafe products should not be used in high-rise residential buildings and in our view full system testing is the best way of screening them, as systems incorporating unsafe materials simply will not pass these tests. 4.We have conducted more than 1,800 external fire tests to national and international standards in recent years, and believe that we have carried out more product and full system fire safety tests than any other construction material company. We know from this extensive independent testing and research that fire performance is a complex science and that systems containing so-called non-combustible and limited-combustibility materials cannot be automatically assumed to adequately prevent fire spread. 5.Notably, we are aware of systems solely comprised of materials classified as non-combustible and limited-combustibility materials which have failed the criteria set out in the large scale fire tests used by the Government to determine fire safety (BS8414 / BR135). 6.Conversely, many cladding systems incorporating combustible thermoset insulation materials have passed BS8414. These independent tests show that such materials, when incorporated as part of a given cladding system, can resist fire spread. We therefore disagree that a ban on all "combustible" materials is necessary in order to improve the safety of building occupants in the event of a fire. 7.There is a wide spectrum of performance of combustible, limited combustibility and non-combustible cladding materials. This is because classification as "non-combustible" and "limited-combustibility" relies

	predominantly on the determination of the gross calorific value of a product, not on its flammability. It is important to note that "combustibility" and "flammability" denote significantly different reactions. 7.1 Flammability or combustibility also depends largely on the chemical composition of a material as well as the ratio of its mass versus surface area. For example, finely divided wood is flammable whereas a solid piece of wood is much harder to ignite, even though the actual material is the same. 7.2 Professor Luke Bisby made this point to the Grenfell Tower Inquiry, when he stated in his evidence that: *"In reality, for materials that have the potential to burn, by which I mean those materials that are combustible, flammability is a relative rather than an absolute property. Depending on the circumstances therefore, combustible materials can either be more or less flammable, and this distinction is actually very important"*. He went on to state that *"…just because a material can burn under some circumstances doesn't necessarily mean that it will burn under a particular set of circumstances, and this idea will be familiar to anyone who has attempted to start a log fire without using kindling."* 7.3 Another example is Glulam (a glued laminated timber product used as a structural support in buildings) which is often used as a structural frame instead of steel. Whilst Glulam is deemed combustible and steel non-combustible, it is well documented that Glulam has superior fire properties to steel, in that at high temperatures steel will melt and buckle resulting in structural failure of a building whereas the Glulam chars but can retain its structural properties for longer. 7.4 Despite the non-combustible rating it is also worth noting that materials that are classified as A1 non-combustible are allowed to have up to 2 mega Joules (MJ) per kg of combustible content which means that 1 tonne of non-combustible material can contribute up to 2000 MJ of energy when burnt. 8. For the reasons detailed in paragraph 7 of our response, "non-combustible" does not always mean "non-flammable". Similarly, this does not mean that materials that are "combustible" are "flammable". For example, thermoset insulation materials (such as PIR and phenolic foams, and hybrid materials such as QuadCore) char when exposed to heat/fire and self-extinguish when that heat/fire source is removed. They may be "combustible" but they are not "flammable". 9. 'Non-combustible', 'limited combustibility', 'Class 0' and 'Class 1' classifications of insulation and façade materials are made solely through small scale tests on isolated product samples (currently BS 476-4, -6, -7 & -11 / BS EN ISO 1182, 1716 & 11925-2 / BS EN 13823).

	We therefore do not believe that they provide enough evidence to determine that a material is safe for use on a high-rise building. 9.1 These tests define a product as non-combustible by burning a small sample of material (less than 5cm cubed or 50g) without seeing how it performs in combination with other materials used on the façade. It is self-evident that the BS 8414 test of the full system – which involves exposing an 8 - 9 metre build-up of the proposed façade to extreme heat and flames - is a far more rigorous and realistic approach to ensure fire safety. 10. We are also concerned that at present, so-called non-combustible / limited combustibility cladding systems are deemed to comply under the linear-based route to compliance under Approved Document B, paragraphs 13.6 and 13.7. Kingspan is aware of three systems containing solely non-combustible and limited-combustibility products that have failed large scale system tests indicating that they do not adequately prevent fire spread despite being permitted under current Building Regulations. 10.1 FAILED Test 1 - This test was conducted at BRE on 27th October 2016. This system comprised Alucopanel solid core A2 ACM along with Fujairah Rockwool foil faced mineral fibre/stone wool insulation, rated as A1. The system failed on flame height. A short video of this test is included in this response. 10.2 FAILED Test 2 - This test was conducted in Australia on 6th March 2018. The system comprised an Alpolic solid core A2 panel in combination with Rockwool mineral fibre/stone wool. The test used was AS5113 which is identical to the method used for BS8414, but with different pass/fail criteria. Nonetheless, if the BR 135/BS8414 criteria were applied to the test data, the system would have failed on thermocouple data. A copy test report FNW7936 is included in this response. 10.3 FAILED Test 3 - This test was commissioned by Kingspan and carried out at Exova in Dubai on 2nd July 2018. The system comprised Rockwool DuoSlab (which is rated A1) and Vitracore G2 (which is rated A2). The construction of the test rig was a replica of the Ministry of Housing, Communities and Local Government tests conducted immediately after the tragedy at Grenfell Tower. The test failed on the basis of thermocouple data. A copy test report SR0894 is included in this response. 11. Because of the “deemed to comply” linear route, there is a scarcity of published information on the performance of facade systems that comprise non-combustible / limited combustibility insulation and cladding panels. 12. In our view, the tests highlighted in paragraph 10 of our response, show why all cladding systems (including those featuring non-combustible / limited-combustibility materials) should be tested to BS8414 as

	complete systems in their intended configuration in order to ensure consistency in outcomes. Anything short of whole system testing does not meet Dame Judith Hackitt's finding that buildings should be treated as systems, nor does it achieve the Welsh Government's objective of improving the safety of building occupants in the event of fire. 13. We fully agree that some products should not be used in high-rise residential buildings and in our view full system testing is the best way of screening them, as systems incorporating unsafe materials simply will not pass this rigorous test. 13.1 This was clearly demonstrated by the MHCLG Building Safety Program BS8414 tests, where both systems featuring PE- cored ACMs (one with non-combustible insulation and the other with combustible insulation) failed catastrophically. 13.2 This conclusion is further supported by the fact that of the 474 buildings identified by MHCLG as having ACM cladding systems similar to those which failed the Government's large- scale system tests, there is no evidence to suggest any of them were BS8414 tested. 13.3 We also understand that all of the recent notable out-of- control high-rise fires worldwide have involved PE-cored ACMs including: The Address, Dubai; The Torch, Dubai; Tamweel Tower, Dubai; The Lacrosse Building, Melbourne; Saif Belhasa Tecom, Dubai; Al Tayer Tower, Sharjah; Polat Tower, Istanbul; Grenfell Tower, London. 13.4 Professor Luke Bisby's Phase 1 Expert Report to the Grenfell Inquiry also found that "*The primary cause of rapid and extensive external fire spread [on Grenfell Tower] was the presence of polyethylene filled ACM rainscreen cassettes in the buildings refurbishment cladding.*" 13.5 We further note that Sir Ken Knight, in evidence to the Housing, Communities and Local Government Select Committee on Wednesday 27th June, stated that PE-cored ACM is already banned under existing Building Regulations. He also suggested in a letter to the Committee dated 2nd July that "*It may therefore be worth considering if the banning of cladding materials might more appropriately be narrowly focussed on 'banning' the use of ACM PE (and any similar polyethylene core composite material) on the external face of a building".* 14. Kingspan is not aware of a building anywhere in the world where there has been an out of control cladding fire where the system has passed, or would pass, a BS8414 test. This evidences that BS8414 testing effectively screens unsafe products in high-rise buildings. This also evidences that there is no need for prescriptive bans because systems containing unsafe products, such as PE-cored ACM, will be non-compliant.

	15. We note that some have expressed concerns regarding the rigour of BS8414 tests. The BS8414 test is designed to replicate a fire starting inside a room, breaking out through a window of a multi-storey building and exposing the external cladding to fire. It is designed to evaluate the rate and extent of fire spread within a cladding system. 16. BS8414 is a robust test that has been adopted (or a variant thereof) by many countries worldwide. A recent report by Tenos International Fire Engineering Consultants has concluded that BS8414 has a higher fire load than the other internationally used large scale cladding test, NFPA 285, and that its fire load is already higher than that seen in test experiments reflecting real life scenario fires. 16.1 Nevertheless, we fully agree that there is scope for the processes around the BS8414 test, and how variants of these tested systems are handled, to be tightened and better controlled. 17. Large-scale full system fire tests are also used to regulate the performance of cladding systems in the UAE, Australia, USA, France, Sweden, New Zealand, China and Canada. 18. We note that paragraph 8 of the consultation states that *"The Welsh Government agrees with the advice of the UK Government Expert Panel that systems which have passed the BS 8414 test and have been correctly installed and maintained and therefore meet Building Regulations' guidance, provide a safe way to ensure that wall system will resist the spread of fire."* We further note that the UK and Welsh Government's proposals do not recommend removing cladding systems which contain combustible materials from existing buildings. 19. In light of the Welsh Government's stated aim of ensuring building safety, this leads us to believe that the Welsh Government agrees with our position that combustible products which have passed the BS8414 test and have been correctly installed and maintained achieve the objective of ensuring fire safety. For this reason, we are concerned that a blanket ban on combustible materials would unnecessarily restrict the use of materials which are deemed safe under the Welsh Government's own guidance. Furthermore, we are concerned that a blanket ban on combustible materials would cause confusion and unease for those living in buildings with combustible materials despite the Welsh Government's policy stating that such systems are safe. 20. We appreciate the Welsh Government's desire to provide a straightforward way of determining which materials can be used in a cladding system. However, as detailed above, we are concerned that a prescriptive approach based on combustibility classifications will not achieve the Welsh Government's stated objectives. Instead we favour an outcomes based approach which focuses on how cladding systems will perform in real life.

	21. If the Welsh Government chooses to proceed with a ban on combustible materials, we believe that those materials that are not banned should only be permitted as components of systems that have also passed a large scale fire test. 21.1 We welcome the recommendation of the Housing, Communities and Local Government Select Committee that if the Government proceeds with a ban on combustible materials then this should be supplemented by full systems testing. 21.2 However, we are concerned that the Housing, Communities and Local Government Select Committee has recommended a ban on combustible materials and yet states in their Report that *"As part of this inquiry, we received various test reports relating to how cladding systems using materials classified as being of limited combustibility performed under large-scale tests, a number of which were performed outside of the UK. Given the necessary technical expertise required, the Committee does not see its role as interpreting the results of such tests, or determining or their implications."* 22. For the reasons detailed above, we believe that an outcomes based approach to regulations, rather than a prescriptive approach, together with systemic reform to ensure buildings are built, maintained and managed correctly, is the best way to achieve the objective of improving the safety of building occupants in the event of a fire. For this reason, we believe that the performance based standard laid down in the current Building Regulations is fit for purpose and, if effectively enforced, will yield safe buildings. 23. As previously noted in paragraph 2 of our response, Dame Judith Hackitt, also called for an outcomes or risk-based regulatory regime (and did not advocate banning specified materials in her Report). A similar report in Australia, commissioned by the Building Ministers' Forum and published in April 2018, by Professor Peter Shergold & Ms Bronwyn Weir also calls for a performance based approach to Australian building regulation. 23.1 We note that Dame Judith's statement that using products which are non-combustible or of limited combustibility is the lower risk option has been cited by many in support of a ban on combustible materials. However, these comments were made before the three failed tests detailed in paragraph 10 of our response were made public. 24. The fire safety of any building depends on correct design and proper installation of the materials used. Incorrect installation will create a significant fire risk regardless of the combustibility classification of the materials. 25. Concerns have been widely raised about the quality of installation across the construction industry. However, we should neither accept nor assume the inevitability of poor build quality. We don't tolerate poor

	quality in other safety critical aspects of modern life where we require the entire system to pass performance safety tests, and not just individual parts (e.g. motor cars and consumer goods). 25.1. We believe that building safety should be treated no differently. We agree with Dame Judith's conclusion that the entire construction supply chain by which we design, construct, maintain and manage buildings needs fixing, and without systemic reform buildings will still fail to meet the required performance standard. 26. We recognise that the cultural change identified by Dame Judith will require time. However, we believe that subjecting all cladding systems to large scale testing and the introduction of a Building Control taskforce that is trained and mandated to ensure the compliance of work on high rise / risk buildings, would be important short-term interventions. 27. For the reasons detailed above, we conclude that a ban on combustible cladding materials would be ineffective in achieving the Welsh Government's stated objective. We further contend that by testing a cladding system as a whole, regardless of whether it contains combustible or non-combustible products, we can provide a clear and enforceable standard for industry, without banning or removing tested and safe cladding systems.
b. Should the ban be implemented through changes to the Building Regulations (i.e through legislation rather than the Approved Documents)?	28. We do not agree with a proposed ban on combustible materials, but should the Welsh Government choose to proceed with a ban on specific materials or products, we believe that the ban should be enacted through changes to the Approved Document. 29. Given the importance of proper selection and installation of materials to ensure safety, we support strong compliance mechanisms and we believe that this should be enforced through changes to the Building Regulations. If the Welsh Government were to proceed with our recommendation of subjecting all cladding systems to large scale fire tests, we believe this should be implemented through changes to the Approved Document.
c. If no, how else could the ban be achieved?	30. As noted in paragraph 29 , any change could be made through Approved Document B.

Question 2	**Yes/No/Don't Know**
Do you agree that the ban should apply:	
a. to buildings 18m or over in height?	31. As detailed in paragraphs 1 – 27 of our response, we do not agree that all combustible materials in cladding systems should be banned. 32. If the Welsh Government chooses to proceed with a ban on specific materials or products, we believe that the ban should be applied to those buildings where a full system fire engineering assessment indicates that intervention is necessary.
b. If no, to what height, higher or lower, should the ban apply? Explain why	33. We note that Dame Judith's Report identifies buildings of over 10 storeys in height as having the highest risk and states in paragraph 1.3 that *"the likelihood of fire is greater in purpose-built blocks of flats of 10 storeys or more than in those with fewer storeys and, particularly after the fire at Grenfell Tower, the rate of fatalities is also greater in such buildings".* We therefore conclude that any ban should be on buildings over 10 storeys rather than 18m. 33.1 We note that Dame Judith's finding in Appendix C of her Report that *"there is a higher rate of fire-related fatalities in high- rise purpose-built residential accommodation of 10 storeys or more with around three times as many fatalities as compared with purpose-built flats below 10 storeys. There is little difference between the rate of fire-related fatalities in purpose built blocks of flats that have one to three storeys and those with four to nine storeys*.""
c. throughout the entire height of the wall, i.e. both below and above 18m?	34. We believe that any restrictions on the materials or products used on a building of over 18m / 10 storeys should apply to the whole of the building as it would be impractical and illogical to have dual regulatory systems applying to a single building.
d. to high-rise residential buildings only?	35. If the Welsh Government chooses to proceed with a ban on specific materials or products, we believe that the ban should apply to those buildings with the highest risk profile. 36. We note that Dame Judith's Report states in paragraph 1.3 that residential properties have the highest risk factor and therefore believe that any ban should be limited to high-rise residential buildings. 36.1 We further note that the Home Office Fire Statistics support this view. These show that the rate of fatalities occurring in residential properties is more than three times as high as in other properties where people sleep (such as hospitals and hotels/hostels) and very significantly higher than in other building types, such as for offices, shops and restaurants. This evidences that residential buildings are higher risk and should therefore be the priority for any intervention. 36.2 There are a number of reasons why non-residential buildings have a lower risk profile including additional fire safety engineering requirement under Approved Documents A and B, as well as round the clock supervision for those non-residential properties (such as hotels, hospitals and hostels) where people are asleep.

	36.3 We further note that the insurance industry has long relied upon large scale system tests to assess the performance of combustible core steel faced insulated sandwich panel systems. The Loss Prevention Certification Board (LPCB) & FM Approvals (formerly Factory Mutual) have a range of tests and certification systems to assess the performance of insulated sandwich panels in fire scenarios. These large-scale system tests and certification systems were originally introduced in the mid-1990's and have provided a high level of confidence, over many years, to the insurer, building owner and occupier alike. Perhaps one of the strongest endorsements of these certification schemes is the reaction to fire of certified combustible core systems in real fire situations. Kingspan has a range of independently investigated real fire case studies. Building types include hospital, school, food preparation, retail warehouses, industrial storage, temperature-controlled storage, car dealership & industrial processing. The overall conclusions are: 36.3.1 Polyisocyanurate (PIR) cores charred in the immediate vicinity of fire. 36.3.2 Fires were not propagated within the PIR core. 36.3.3 PIR panels did not char significantly outside of the area of the main fire. 36.3.4 Dominant influence on fire severity was the contents of the building – fire severity not significantly influenced by the PIR panel. 36.3.5 No evidence to indicate that PIR panels increased the risk of fire spread. 36.4 We have attached our brochure 'Not All Insulation is the Same… Fire Test Certification & Real Fire Case Studies'. The full independent reports each of the fire investigations described between pages 12 and 26 are available on request. However, we have included the full report on the Wharfdale Hospital fire because the fire broke out of the building at one level and flames impinged directly on the surface of the external cladding, which in this case, was an LPCB certified metal faced sandwich panel with a combustible PIR core. The independent report concludes – *"In spite of the significant heat generated by this fire (sufficient to damage the intumescent coating and distort the steel beams); the orientation of the cladding panels (directly above the fire); and the fact that fire stopping was not in place; the cores of the panels, as evidenced in Photographs 9, 10 and 11, did not ignite, did not promote fire spread within the core or to the eaves and did not significantly contribute to the products of combustion".* 37. We also believe that any ban should only apply to refurbishment works done on existing high-rise residential buildings. This is because, as Dame Judith identifies in her Report, buildings operate as systems and it is far easier to design additional fire engineering safety features in new buildings. Measures might include smoke management systems, sprinklers and multiple escape routes. Such fire prevention measures are far more difficult to implement in existing buildings and we therefore believe that intervention would be more appropriately focussed on such buildings.
e. If no, should the ban apply to high-rise	38. We do not agree that any ban should apply to buildings other than existing residential buildings of over 10 storeys in height for the reasons set out in paragraphs 31 to 37 of our response. We believe

non-residential buildings e.g. offices and other buildings, as well as residential buildings?	that any intervention should be focussed on those buildings with the highest risk profile.
f. Please provide any further information in relation to your answers above	

Question 3	**Yes/No/Don't Know**
a. Do you agree that the European classification system should be used?	39. We do not believe that either the national classifications "non-combustible" and "limited combustibility" based on testing to BS476-4 and -11 or the European classifications of Euroclasses A1 and A2 based on testing to BS EN ISO 1182 & 1716 / BS EN 13823 provide robust classification methods in order to achieve the objective of improving the safety of building occupants in the event of a fire. 39.1 However, to achieve Dame Judith Hackitt's recommendation of increasing regulatory clarity, we believe that it would be helpful if there were a single product classification system in operation in the UK. 39.2 The National classification system, based on different parts of BS476, would be our preference especially since: (1) with Brexit, we will have no influence over future changes to the Euroclass system; and (2) the SBI test (BS EN 13823) within the Euroclass system requires mounting and fixing rules to be defined within product standards – but these product standards can take years to be agreed for new products – so therefore this leaves a loophole in the Euroclass system for new products that do not exist in the UK National classification system, for which no mounting and fixing rules are required.
b. If yes, do you consider that Class A2 or better is the correct classification for materials to be used in wall construction?	40. Refer to answer in paragraph 39 of our response.
c. If no, what class should be allowed in wall construction and why?	41. As set out in paragraphs 1 to 27 of our response, we believe that a prescriptive approach which relies on the classification of products will not achieve the objective of improving the safety of building occupants in the event of a fire. We believe that all products which pass full system tests should be permitted in their tested combination as they have demonstrated that they achieve the necessary level of fire

	safety. For this reason, they should be permitted regardless of their combustibility classification.

Question 4	**Yes/No/Don't Know**
a. Do you agree that a ban should cover the entire wall construction?	42. As detailed in paragraphs 1 – 27 of our response, we do not agree that all combustible materials in cladding systems should be banned. 43. If the Welsh Government chooses to proceed with a ban on specific materials, we do not agree that a ban on combustibles should apply to the entire wall construction. 44. We question whether any ban would be feasible in practice unless the ban were based on systems that do or don't pass a BS8414/BR135 test. For example, a typical mineral fibre insulated rainscreen system might contain combustible content including breather membrane, breather membrane tape, cement particleboard tape, thermal breaks and gaskets. It would be largely impossible to find non-combustible / limited combustibility versions of these products. However, their performance can be significant to overall system performance in a system test like BS8414 and so they cannot be ignored.
b. If no, what aspects of the wall should it cover?	45. If the Welsh Government chooses to proceed with a ban on certain materials / products, we believe that the most effective approach to deliver safe and clear Building Regulations would be to regulate based on performance to the BS8414 test and limit a ban to combustible external cladding panels in ventilated rainscreens. 46. This is because, as detailed in paragraph 13 of our response, PE-cored ACMs are by a substantial margin the most significant contributor to fire spread in known fires and fire tests.
c. Should a ban also cover window spandrels, balconies, brise soleil and similar building elements?	47. We believe that all components of the external wall of a building should be subjected to fire testing. However, because it would be impractical to incorporate these elements into a BS8414 test, new fire tests may need to be developed. For the reasons detailed above we do not believe that a ban on all combustible content would be appropriate. 47.1 The effect of these components will be due to the extent and frequency of their use on a façade. The best way to assess their impact may well be by conducting a fire engineering assessment of the whole façade design utilising fire test data as mentioned in paragraph 45. Restricting their use unnecessarily may reduce other building performance aspects whilst not achieving notable improvements in terms of fire safety.
d. Please provide any further information in relation to your answers above	

Question 5	**Yes/No/Don't Know**
a. Do you agree that a limited	48. As detailed in paragraphs 1 – 27 of our response, we do not agree that all combustible materials in cladding systems should be banned.

number of wall system components should, by exception, be exempted from the proposed ban?	49. We agree with the Welsh Government that any ban, as proposed, would have to be subject to a number of exemptions. For example, a typical mineral fibre insulated rainscreen system might contain combustible content including breather membrane, breather membrane tape, cement particleboard tape, thermal breaks and gaskets. It would be largely impossible to find non-combustible / limited combustibility versions of these products. 49.1 Furthermore, the creation of exemptions would be fraught with difficulty because of change and innovation. In any case, we believe that the list of exemptions would need to be extremely lengthy and may therefore be completely impractical to implement and police. 49.2 This could be avoided by simply regulating based on performance according to BS8414/BR135 tests, as the performance of all planar components of a system can be tested by this test. They can be significant to overall system performance in a system test like BS8414 and so they cannot be ignored.
b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?	50. As detailed in paragraphs 44 to 45 of our response, if the Welsh Government chooses to proceed with a ban on certain materials / products, we believe that the most effective approach to deliver safe and clear Building Regulations would be to limit a ban to combustible external cladding panels in ventilated rainscreens and to regulate solely based on performance according to BS8414/BR135 tests. By limiting a ban in this way, all other components of a cladding system would be exempt.
c. If no, what alternative way of achieving the policy aims would you suggest?	51. As detailed in paragraphs 1 to 27 of our response, we believe that the most effective way of improving the safety of building occupants in the event of a fire, would be testing a cladding system as a whole, regardless of whether it contains combustible or non-combustible products.

Question 6	**Yes/No/Don't Know**
Do you agree that:	
a. the ban should apply to proposed material alterations to existing buildings, including over-cladding?	52. As detailed in paragraphs 1 – 27 of our response, we do not agree that all combustible materials in cladding systems should be banned. 53. If the Welsh Government chooses to proceed with a ban on specific materials or products, we believe that the ban should apply to those buildings with the highest risk profile. As detailed in paragraphs 36 and 37 our response, we believe that works on existing high-rise buildings are the highest priority for remedial works.
b. the ban should extend to projects that	54. If the Welsh Government chooses to proceed with a ban on specific materials or products, we are concerned that if a ban did not operate on projects that have been notified before the ban takes effect but

have been notified before the ban takes effect but work has not begun on site?	work has not begun on site, then the Welsh Government's objective of ensuring the safety of building occupants might be undermined.
c. the ban should not affect projects where building work has already begun on site?	55. If the Welsh Government chooses to proceed with a ban on specific materials or products, we are concerned that if a ban did not operate on projects where building work has already begun, then the Welsh Government's objective of ensuring the safety of building occupants might be undermined.
e. Please provide any further information in relation to your answers above	56. We believe that a risk based approach is the most appropriate way of carrying out remedial work to existing buildings. We further support a whole system fire engineering approach to all buildings, existing and new, as advocated in Dame Judith's Report. 57. The MHCLG Building Safety Program BS8414 tests and the failed tests containing only non-combustible and limited-combustibility products detailed in paragraph 10 of this response highlight the urgent need to address the safety of existing buildings which may not comply with the current Building Regulations and we welcome the Welsh Government's programme of remedial safety work. 58. As detailed in paragraph 37 of our response, we believe that existing buildings have the highest risk profile and that therefore any prescriptive intervention should be focussed on these buildings.

Question 7	**Free text answer**
a. Which wall elements are likely to be affected by the proposed change – i.e. where they would pass as part of a cladding system in a BS 8414 test but would not meet the proposed Class A2 or better requirement (e.g. sheathing boards or vapour barriers)?	59. As detailed in paragraphs 44, 47 and 49 of our response, the scope of a ban on all combustible materials could be extremely wide-ranging. In theory, all elements of a system could be affected with the possible exception of the aluminium bracketry, which is common to all systems. 60. We further note that there are systems which incorporate combustible products that have passed BS8414 and would see some or all of their components banned. However, there are systems that comprise so- called non-combustible or limited combustibility insulation and cladding panels that have failed BS8414 but which would not be affected by the proposed change.

b. In England there are suggestions that since the Grenfell Tower fire, a high proportion of relevant building work is already using elements which meet Class A2 or better. What is your experience?	61. As one of the largest manufacturers of cladding and insulation products comprising both combustible and non-combustible materials, we have noted an increase in projects using non-combustible / limited combustibility materials. 62. However, we are concerned that the failed tests containing non-combustible / limited-combustibility cladding detailed in paragraph 10 of our response suggest that the reliance on these materials might be misplaced. Furthermore, we are concerned that a number of buildings that were identified under the MHCLG Building Safety Program might since have been reclad with systems which would not pass BS8414.
c. What is the impact of removing access to the BS 8414 for those buildings affected by the ban test likely to be?	63. As detailed above, we are concerned that moving away from performance based full systems test to a prescriptive approach will undermine public confidence in existing buildings which have BS8414 compliant systems. 64. Furthermore, in light of the failed BS8414 tests of systems comprising non-combustible and limited-combustibility materials, detailed in paragraph 10, we are concerned that removing access to BS8414 test will result in unsafe buildings. 65. We also note that if modern high-performance insulation solutions are banned, any replacement traditional mineral fibre insulation will be roughly twice as thick. 65.1 This will have structural impacts on designs, potentially increasing costs. 65.2 Thicker walls also lead to deeper window reveals which, in turn, will lead to lower levels of daylight in buildings, which has been shown to have impacts on health and lighting costs. 65.3 For some projects where the dimensions of the external envelope are constrained, less floor space will be attainable, which may make some projects financially unviable. 65.4 Mineral fibre insulation is at greater risk of thermal performance degradation from moisture and air infiltration than modern high-performance phenolic and PIR insulation solutions.
d. How much extra cost would typically be involved in meeting the proposed new requirements (for buildings 18m or over) against a building which meets the	66. We think that the estimated cost of 1700m^2 of compliant cladding on a 15 storey building is an underestimate and can only be accurate for a building with a very small footprint. If one assumes 30% glazing it would imply a block with a footprint of about 7.5 x 7.5 metres. We suggest that it would be more appropriate to base any estimate on a building of at least 15 x 15 metres, but the RIA should really be assessing the reality based on existing buildings rather than making potentially inaccurate assumptions.

current requirements? (Please provide any further details)	
e. Please provide any further comments on the likely impact of this change for construction e.g. supply chains	67. We do not agree with the analysis that there will be no significant pressures on supply chains as a result of the proposed ban. 68. If the Welsh Government chooses to proceed with the ban on combustible materials, traditional fibrous insulation will become the only insulation material that can be used on high rise residential buildings. 69. Kingspan is one of the largest purchasers of mineral fibre insulation for use in our metal faced insulated composite panels. We therefore have direct knowledge of the UK and European supply chain for mineral fibre insulation. 70. The supply of these materials in the UK is dominated by just two manufacturers. 71. At present there is already a capacity shortage in the European mineral fibre market. This has lead at least one manufacturer to reduce current supply levels to customers, and another has announced that its plants are operating at or near full capacity and that it will have to invest in more capacity. 72. We estimate that mineral fibre presently accounts for just 35-40% of the high rise residential building market, which means that if the Welsh Government chooses to proceed with the ban on combustible materials, the mineral fibre industry will have to increase production capacity by about 5 million m2. 73. If Kingspan were to invest now in a greenfield plant for the manufacture of mineral fibre in order to guarantee supply for our own product suite, it would in our view take a minimum of three years to fully commission such a plant, which indicates that the current capacity problems in the mineral fibre industry will persist for at least the medium term. This may potentially impact the MHCLG Building Safety Program and jeopardise the Welsh Government's longer term new housing targets. 74. In the meantime we are aware that, already this year, some mineral fibre manufacturers have either announced or made price increases of between 5% and 20%, either as a result of the capacity shortages or otherwise..

Question 8	**Free text answer**
We have asked a number of specific questions. If you have any related issues which we have not specifically addressed, please use this space to report them:	

Responses to the consultation will be made public, on the internet or in a report. If you would prefer your response to remain anonymous please tick the adjoining box.	