



2 August 2018

Banning the use of combustible materials in the external walls of high-residential buildings
2 SW
Fry Building
2 Marsham Street
London
SW1P 4DF

Dear Sirs

We write in response to the consultation paper proposing the banning of combustible materials in the external walls of high-rise residential buildings.

The Society of Façade Engineering was formed in 2004 as a joint initiative of the Chartered Institution of Building Services Engineers (CIBSE), The Institution of Structural Engineers (IStructE) and the Royal Institute of British Architects (RIBA). It is governed by a Council drawn from among its members and administered by CIBSE. The Society acts as an axis for those involved in the façade industry to determine the credentials of members and as a surety for those seeking to employ them.

The Society of Façade Engineering brings people together in a forum where they can work together to advance knowledge and practice in facade engineering, promote good practice and ensure that today's increasingly complex building façades meet the many and varying performance criteria.

We support efforts to make guidance on the use of materials in external walls clear and unambiguous, however that guidance must also recognise the complex nature of modern building envelopes. A blanket ban on the use of combustible materials is impractical. The guidance needs to be more nuanced to allow the continued use of some combustible materials, including those used for thermal breaks, membranes, laminated glass, gaskets, sealants, and so on. Such materials pose relatively little risk in terms of external fire spread and provide essential functionality, without which other parts of the Building Regulations might not be able to be met.

The SFE would like to support this consultation and if we can be of any additional assistance please do not hesitate to contact us.

The answers to the consultation questions follow below.

Yours faithfully

A handwritten signature in blue ink, appearing to read "David Metcalfe".

David Metcalfe
Chair, SFE Fire Committee

| Question 1 | Respondent details |
|--|---|
| Name | <i>David Metcalfe, BSc, MSc, MSFE</i> |
| Position | <i>Chair, Fire Committee</i> |
| Organisation | <i>Society of Façade Engineering (SFE)</i> |
| Address | <i>Society of Façade Engineering, CIBSE, 222 Balham High Road, London, SW12 9BS</i> |
| Email address | <i>David.metcalfe@cwct.co.uk sfe@cibse</i> |
| Telephone number | <i>01225 330945</i> |
| Please state whether you are responding on behalf of yourself or the organisation stated above | <i>On behalf of the Society of Façade Engineering</i> |

| 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 | |
| Tenant representative | |
| Other interested party (please specify) | <i>Society</i> |

| Question 3 |
|--|
| <p>a. Do you agree that combustible materials in cladding systems should be banned?</p> <p>b. Should the ban be implemented through changes to the law?</p> <p>c. If no, how else could the ban be achieved?</p> |

- a** **No.** The question posed is overly simplistic and does not consider the complex nature of modern building envelopes.

The issue around the use of combustible materials in cladding and façade systems is complex and a blanket ban on such materials would have serious consequences. Materials such as membranes to provide a waterproof barrier (to comply with the guidance in ADC), plastic spacers to thermally isolate support brackets (ADL), thermal breaks in aluminium glazing frames that are required to meet thermal performance targets (ADL) and laminated glass for safety (ADK) are used extensively, and for good reason in modern facades. They perform very important functions and further testing and research is needed to understand their contribution to the risk of fire spread in the façade system.

Any ban needs to be very carefully thought through to ensure an acceptable level of fire safety, whilst maintaining other essential functionality.

The scope of any proposed ban is not clear enough, and the use of the term 'cladding' in the consultation is inconsistent. Cladding is used both to describe the complete wall system and also specifically the outer panels.

'Materials' also needs to be clarified. Most paints are combustible but painted metal as a product can achieve class A1 or A2 depending on the type and thickness of paint. Can combustible materials be used if they are part of a product/system that is classed as A1 or A2?

Does the scope of the consultation include other forms of façade construction such as glazed curtain wall systems, or is it restricted to largely opaque walls such as rainscreen systems?

- b **Yes**, if combustible materials are banned then it should be done through a change in the Building Regulations (ie the legislation) rather than the guidance (Approved Documents) as suggested.

The changes made to legislation now should not preclude revisions in the future. Robust testing and assessment may have a role to play in the future and would allow a risk based approach to be used which could differentiate between a refurbishment project and one that is a new purpose built building, with multiple escape stairways and sprinkler protection, for example.

- c N/A

Question 4. Do you agree that the ban should apply:

- a. to buildings 18m or over in height?
 b. throughout the entire height of the wall, i.e. both below and above 18m?
 c. to high-rise residential buildings only?
 d. to all high-rise, non-residential buildings, e.g. offices and other buildings, as well as residential buildings?

- a **Yes, subject to clarification.**

Whatever height is chosen as the threshold it should be clear, consistent and justified. Current requirements relate to the height of the wall above ground (Diagram 40 of ADB2), the height of the highest occupied floor (Clause 12.7 of ADB) and whether there is a change of building use (Clause 6(1)(c) of The Building Regulations 2010). These different requirements may cause confusion and a single height should be used.

The guidance provided should also be clear as to how it relates to 'non-standard' buildings, such as those involving podiums, large buildings with separate towers of differing height, and low-rise buildings that are built up against tall buildings, etc.

- b **Yes**, the requirements should apply both above and below the height limit set, subject to exemptions highlighted later in question 7.

- c Mixed use buildings with any residential element should be included. Consider the Shard as an example – the lower floors are offices and a restaurant, but the upper floors are residential. Would it make sense for the lower floors to potentially have a lower level of performance, with only the uppermost residential floors required to comprise of limited-combustibility materials in the wall system? If any part of a building above 18 m is residential then the cladding to the entire building should have to comply with the requirements for residential.

Other high risk buildings such as schools, and buildings where people sleep should also be included, for example hospitals, care homes, hotels and student accommodation.

- d **No**, providing (a) there is no residential component, (b) the cladding system used has been tested and installed correctly, (c) the evacuation strategy recognises the potential rate of external fire spread through the wall system, (d) appropriate passive and active fire protection measures are in place, and (e) with appropriate consideration as to the use of adjoining buildings.

Question 5.

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

a **Yes.**

Should there be a limit on smoke production as well? A2 products are allowed with a smoke rating of 's2', i.e. their performance is not established. Should we also consider the evolution of noxious or poisonous vapours which may be invisible but which have proven lethal in other fires, e.g. carbon monoxide and hydrogen cyanide?

There also needs to be an understanding that the European classification system is for products and systems, not for materials in isolation. Materials classified as A2 through D have to be tested in accordance with EN 13823 which is in fact a small scale system test. For example consider testing a material to be used as a rainscreen panel. In addition to the panel material there will be a substrate and possibly insulation behind which would affect the reaction to fire classification of the panel material. Within the material itself, different joint arrangements and so on could be used which may also affect the result.

The testing and reporting process of materials needs to be clearer so that applicability limitations of the test results are known.

b N/A

Question 6.

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

a **Yes**, but there should then be exemptions for materials/products which are necessary but cannot be economically or practically produced from non-combustible materials.

b There are many different ways of constructing walls. These need to be described and the exemptions from the ban need to be identified for each method of construction.

c **Yes**, however the wording should be more specific about what is included, rather than saying 'similar building elements'. Include for example soffits and roofs where a tower rises out of the roof of a podium block. When does a balcony become a terrace or a roof? It is generally not practical for roofs to be entirely non-combustible, so inclusion of roofs will require further exemptions.

Question 7.

- a. Do you agree that a limited number of wall system components should, by exception, be exempted from the proposed ban?
 b. If yes, what components should be included on an exemption list and what conditions should be imposed on their use?
 c. Would you recommend an alternative way of achieving the policy aims stated above?

- a **Yes.** If this is not the case it would be severely limiting and may prevent other parts of the Building Regulations from being met (see question 3).
- b A full and comprehensive list of exclusions should be developed (avoiding the use of 'and similar' and 'etc' as seen in the current guidance). In addition to the components mentioned, a list would include:
- Curtain wall frames (explicitly) – if curtain walls are within scope,
 - Thermal breaks (if not covered under 'window/curtain wall frames'),
 - Thermal breaks/packers used behind rainscreen brackets,
 - Structural thermal breaks, such as those used for balcony construction,
 - Combustible materials that form part of a product that is classed as A1 or A2 (such as a painted metal panel)
 - Adhesives (where the performance of a panel including the adhesive is tested),
 - Setting blocks,
 - Backer rods,
 - Waterproofing to balconies and terraces,
 - Insulation within masonry cavity walls,
 - Insulation used where it is required to be water resistant, such as below ground level,
 -

A list of exemptions could be done by means of an independent appendix that could be updated periodically to add new materials if they are decided to be a risk, or perhaps it should be part of Regulation 7 on materials.

Should different rules apply if the combustible element is exposed? For example;

- A standard breather membrane could be used if placed/protected behind the insulation, or
- Class B membrane if the membrane is exposed/on the outer face of the insulation.

Where combustible materials are used, should there be a limit to their use (based on a maximum calorific value per m², or volume of material for example)? If so how would this limit be established? Would the same limit apply to all wall types? Research and testing is required to establish appropriate limits.

Should there be a second limit preventing certain materials from being continuous over several storeys, or rather allowing certain materials (say interlayers and glazing gaskets) so long as they are not continuous and could not act as a wick or fuse to carry fire across compartment boundaries?

- c **No.** A simple approach is best if we are just considering residential buildings. If non-residential buildings fall into scope, then other means of meeting the policy aims are likely to be required (allowing fire engineering for example).

Question 8. Do you agree that:

- a. a risk-based approach is appropriate for existing buildings?
- b. the ban should apply to proposed alterations to existing buildings including over-cladding?
- c. the ban should extend to projects that have been notified before the ban takes effect but work has not begun on site?
- d. the ban should not affect projects where building work has already begun?

a **Yes, in principle**, but how would a risk assessment be carried out? How would the assessor demonstrate they are competent to assess the building? What level of insurance should they carry? Robust procedures need to be put in place for this.

b Replacement materials to an existing building should meet any proposed new requirements on combustibility.

It could become restrictive to building refurbishment if small scale building upgrades subsequently require large scale material removal/replacement (e.g. window replacement programme on an existing block).

What would happen if someone adds another floor to a building, which takes the building over 18 m? Should/would they have to go back and re-clad all of the lower floors? A risk-based approach would seem more appropriate in this situation.

c Potentially this has to be considered on a project-by-project basis. If the project is in the early stages of design then it would be easier to accommodate any changes in the design. If on the other hand, design and planning is complete and fabrication of the façade has started, then changing the façade is not straightforward. This would raise considerable issues with contractual arrangements, site programmes, investment levels etc. If any contractual penalties arose as a consequence, the specialist suppliers and SME's would need some form of protection/support/ability to change contract terms (or even cancel contracts if they are unable to supply alternative products / comply with the ban).

However, we also need to balance this with the risk to occupants and the view of insurers. Two similar buildings constructed either side of a ban could be valued very differently financially and in risk terms.

d Yes. This would seem to be very difficult to implement. This should not pose a large risk however, as following Grenfell, a conservative interpretation of the current guidance is being taken for most walls, and therefore it is unlikely that we will have instances where combustible cladding and insulation have been specified without having being tested.

For both parts c) and d) of this question, the view of the insurance industry should be sought. Could the insurance industry refuse to insure properties in buildings which just beat the ban in terms of construction date, but would not meet subsequent regulations?

What effect will the proposed changes have on the value of existing flats where the external walls contain combustible material? Is there a danger that those properties will be devalued or become unmortgageable, even if their cladding systems have been approved on the basis of a risk assessment? There is also an issue of consumer confidence – will people be prepared to purchase flats in buildings with (safe) cladding systems that contain combustible materials?

Question 9.

- 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)?
- 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?
- c. What the impact of removing access to the BS8414 for those buildings affected by the ban test is likely to be?
- 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?
- 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.)
- f. Please provide any further comments on the likely impact of this change for construction (eg supply chains).

- a Wall systems that have passed recent BS8414 tests using combustible insulation and combustible cladding (for example phenolic insulation and the FR grade of ACM). Typical sheathing board materials (cement bonded particle board for example), membranes etc. Therefore this change could affect all elements of the wall build-up.
- b The statement that a high proportion of relevant building work is already using elements which meet Class A2 or better is probably true, but only in terms of the cladding panels and insulation material in a cladding system. Other items such as sheathing boards are still likely to be combustible, together with plastic spacers behind rainscreen brackets to provide thermal isolation, membranes for weathertightness etc.
- There is likely some distinction being made in the industry between ‘cladding’ and ‘glazing’ – the consultation document specifically refers to window frames and laminated glass, which suggests that it is intended to include glazing – we would suggest that the use of A2 materials only has not been extended to glazing systems. With glazing systems there remains much confusion and debate as to which elements need to meet the requirements of current Approved Document B2 and therefore fall within the remit of ‘cladding’ (see question 7).
- c A2-rated cladding systems are readily available and could be used on buildings affected by the proposed ban. Doing this will result in a greater thickness of insulation being required to meet thermal performance targets (typically around 50% thicker).
- For new buildings this additional thickness can be accounted for in the design of the system. This could result in smaller internal areas and a subsequent reduction in sale price which could affect the developers’ investment model.
- For recladding of existing buildings which use combustible insulation, having to replace it with non-combustible insulation may result in problems unless thermal requirements are relaxed in these cases. If the cladding system already extends to the legal boundary, any additional thickness of insulation is unlikely to be able to be accommodated.
- This could also be an issue for recent buildings where the cladding system has been approved on the basis of a BS8414 test. How will occupants of those buildings feel about this? What view will insurers take? See question 8.
- d Any building where people sleep or are otherwise deemed high risk, such as schools.
- Is it feasible that insurers will apply these requirements to all buildings regardless of use?

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- e This is difficult to quantify. 'Costs' should also include loss of income from reduction of internal floor area, rather than just being assessed by base-build costs.
- f In the short term there may be issues with demand for class A1/A2 materials and products outstripping available supply. It is difficult to predict how long this might last.