ENGINEERED PANELS IN CONSTRUCTION

12 October 2017

Department for Communities and Local Government (DCLG)
2 Marsham Street
London
SW1P 4DF

Dear Sirs,

RE: Independent Review of Building Regulations - The call for evidence for the independent review of building regulations and fire safety

EPIC is the highly respected industry body for PIR insulated panels in the UK. We are an active member of the Fire Sector Federation (FSF) and as such work with the All-Party Parliamentary Fire Safety & Rescue Group.

Please find enclosed our response to the above 'call for evidence' request. This is supported by more in-depth information/files attached to this email. These files include:

1. EPIC cladding terminology and explanatory notes
2. EPIC proposed revisions to AD-B (original summation document)
3. EPIC BS 8414 test summary
4. EPIC Loss prevention standards summary
5. Tenos RA Wood Adhesives report
6. Tenos Clifton Comp. report
7. Scientific research paper ref 17053 – smoke toxicity
8. The performance of PIR core sandwich panels in real fire situations
9. PU 16-273 presentation (Belgium regional approach to regulation and sanctions)
10. UAE Chapter 1

We would very much welcome an opportunity to discuss this further with you at your convenience.

Yours Sincerely,

M Hardwick

Martin Hardwick
General Secretary

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The overarching legal requirements

Q1 **To what extent are the current building, housing and fire safety legislation and associated guidance clear and understood by those who need to follow them?**

In particular:

- **What parts are clear and well understood by those who need to follow them?; and, if appropriate**

  AD-B is generally well received. However, due to the fact that the document is 'guidance only' rather than regulation/stipulation, the document contents are not always adhered to.

  Where specifically do you think there are gaps, inconsistencies and/or overlaps (including between different parts of the legislation and guidance)? What changes would be necessary to address these and what are the benefits of doing so?

  As a result of the document being written as 'guidance only' rather than legislation/regulation, the document often contains multiple options, and as such lacks clarity and is open to interpretation and/or allows additional guidance documents and extrapolations to be used. As such legislation does not exist.

  Our suggested specific Approved Document B (AD-B) revisions have been included for reference below. The section numbers stated below relate directly to AD-B:

  0.13 – Building should be constructed from building materials / products that will not make a significant contribution to the early stages of a fire or contribute to fire spread.

  0.15 – Independent schemes – all fire protection products should be third party certified. In addition installer of fire protection products should be third party certified

  6.1 – classifications of linings – Requirements for property protection to be included. Lining systems to be tested to LPS 1181 (and/or FM 4880). This requirement to be applied to the lining system – not just the surface. For example steel or aluminium surfaces are 'non-combustible' but the core material may be highly combustible. Large scale testing of the system is vital to assess the risks associated with the lining system.

  8.20 – Compartmentation – Compartment walls and ceilings in buildings involving sandwich panel and built-up systems should meet the requirements of LPS 1181 part 1 & 2 and/or LPS 1208 and be installed by a contractor certified to an appropriate installer scheme such as LPS 1500.

  8.28-8.30 - Junction of compartment wall with roof. In the case of insulated metal cladding systems the interface should meet, as an alternative to paragraphs 8.28-8.30, the requirements of the following advice published on the planning portal website - http://www.planningportal.gov.uk/buildingregulations/approveddocuments/partb/faqs/other

  Please also see attached (as evidence that LPCB / FM approved roof panels are suitable for passing over internal compartment walls) a copy of the Tenos report for RA Wood Adhesives and Clifton Comprehensive.

12.5 – 12.9 – External wall construction. All insulated façade systems contain combustible materials, for example the binders that bind the fibres together in a mineral fibre insulation. Furthermore, combustible elements of a site-assembled cladding system typically include:

- Breather membranes
- breather membrane tape (double sided);
- cement particle board tape;
- mineral fibre insulation binder;
- helping hand bracket thermal breaks; and
- paint coatings.

These combustible elements (above) can massively distort during a real fire potentially resulting in components of the façade falling off the building which may include fire barriers, therefore accelerating fire spread.

Therefore even if a façade system incorporates non-combustible and limited combustibility insulation (as currently defined), and therefore could be considered to be automatically compliant with Building Regulations, it could contain a significant quantity of combustible material. In addition all façade systems contain voids which can help promote rapid fire spread. The use of cavity barriers is generally accepted as a method of fire stopping these ventilated voids in rain screen cladding systems, however, in reality the only reliable way to determine the performance of cavity barriers in systems is to test the system in a large scale test such as BS 8414.

Appendix F – Fire behaviour of insulated core panels used for internal structures. This section needs to incorporate the large scale fire tests utilised by the insurance industry.

These tests demonstrate the excellent reaction to fire and fire resistance characteristics of panel systems meeting certification requirements. Suitable tests include LPS 1181 part 2, LPS 1208 and FM 4880 for internal applications.

With specific regard to cladding and external insulation products/systems/materials:

As evidenced from the recent DCLG/BRE BS 8414 large-scale testing regime, it is clear that the 'alternative methodology to the BS 8414 test required to demonstrate compliance with BR135', defined within AD-B sections 12.6 to 12.9 and including diagram 40, for categorisation of products/systems/materials under the A1-F rating via the various and numerous test options available (which then leads on to 'Class O Limited combustibility' criteria under AD-B) is flawed, and in our opinion, should simply be replaced by compliance to BR135 being satisfied by BS 8414 testing only for buildings with a storey above 18m (as per section 12.5 of AD-B), with extrapolation from only base-BS 8414 tests allowable.

Currently, 8 different tests (proven not to be equivalent to BS 8414, i.e. less robust tests) exist within 12.6 to 12.9 of AD-B, and have been used to present certain products/systems/materials as compliant, when in reality they are widely accepted by the construction industry and professionals as not been appropriate for use on buildings with a storey above 18m.

In terms of evidence, the recent DCLG/BRE testing regime proved that products/systems/materials certified via the 'alternative standards' (listed below) and in-use on thousands of 'current AD-B compliant' buildings across the UK did not pass the requirements for BR135 when tested to BS 8414 specification.

This is clear and irrefutable evidence of a need to move to mandatory BR135 compliance demonstrated only via the BS 8414 test specification methodology and certification process for buildings with a storey above 18m.

Note: The 8 alternative tests available instead of the BS 8414 route are BS 476, part 4, 6, 7 or 11 OR BS EN ISO 1182, BS EN ISO 1716, BS EN 13823 or BS EN ISO 11925, part 2

As an example of the flaws of the current system, some of the BS 476 tests referenced above use a radiant heat source within the test process, even though it is recognised that this applied heat does not replicate that seen within a real fire.

As such, under these test conditions aluminium does not reach its melting point of 660 Deg C. However, if/when a real fire occurs, the melting point of aluminium will be exceeded, thus exposing the core material of the Aluminium Composite Material.

Currently, compliance with AD-B Class O can currently be confirmed via the above BS 476 test methodology, thus legitimately allowing a product's use on buildings with a storey above 18m.

Desk-top studies and engineered design routes have also been proven to be flawed and not equivalent to the BS 8414 test process serving to provide compliance to BR135. This is evidenced by the fact that products/systems in-use on numerous buildings across the UK, approved by this route, have failed the recent DCLG/BRE BS 8414 test regime.

At present, desk-top studies and engineered fire routes can exclude actual test-data and can instead be replaced by designs based purely upon the author's opinion. Furthermore, studies such as these have been proven to be in-place from companies not listed as approved designers by AD-B and its supporting guidance (Technical Guidance Document 18 refers). This is completely legitimate and allowable, as AD-B and the supporting TR18 document are both only classified as guidance and as such can be ignored.

Hence, in our opinion, desk-top studies and engineered routes should, in future, only be allowed if base-BS 8414 test data exists, and only if competent/authorised personnel are used to extrapolate the information. Studies/designs without test data should no longer be valid. Additionally, the process and format of desk-top studies should be structured and normalised by the creation of a BS EN ISO standard to specify the specific requirements for this key construction/design process.

A change to the specification of 'BS 8414 and only base-data extrapolation' for buildings above 18m would give confidence to the public and the wider industry in terms of clients, engineers, architects and contractors.

Furthermore, it should be noted that very similar BRE approved/certified large-scale test criteria (LPS/FM Global tests) already exists for products/systems/materials for use below 18m. LPS/FM standards are well established, acknowledged and specified worldwide.

Hence, in summary by specifying the following criteria as mandatory, and without alternatives, the building regulations can be reinforced and made fit-for-purpose quite easily:

- **Above 18m – (i.e. buildings with a storey above 18m) -** BS 8414 testing to demonstrate compliance with BR 135, with extrapolation from base BS 8414 tests available when performed by approved/competent and individuals possessing 'stipulated levels of qualification'. Extrapolation is allowed for variations in terms of size, shape, thickness, fixings, penetrations, colour, aesthetics, but not constituent material changes.

- **Below 18m** – LPS or FM Global testing with extrapolation as above

With regard to our call for BS 8414/LPS & FM testing and extrapolation for all products/systems/materials, please be assured that our technical interpretation is not market driven, but instead is intended to provide a technical solution to the whole construction industry. Indeed, some sectors and companies within the PIR industry that we represent cannot currently offer BS 8414 solutions, but are 100% behind the need to tighten regulation in order to avoid a repeat of the tragic events witnessed at Grenfell.

Please see attached our explanatory documents in support of BS 8414 & LPS/FM Global testing and the standards they cover. These tests apply to ANY material and ANY product/system in-use and thus provide a constant and consistent method of assurance.

In terms of calls for additional 'smoke toxicity' regulation, we would comment as below:

Calls for regulation and reference to inappropriate test methodology have been raised and dismissed previously as being inadequate and unnecessary.

It is our sincere belief that we should concentrate our efforts and work together as an industry to reduce the risks of fires, and to enhance the fire performance of buildings, thus preventing smoke from ever occurring in the first place, rather than hastily seeking to regulate gases that are present in virtually all building materials and room contents.

Independent research from global experts on life safety shows that the majority of relevant smoke and toxic gases that result from a fire in a building are produced from burning contents.

In addition there is no agreed ISO or European test standard or assessment methodology to measure smoke and/or toxic gas emissions for any panel or façade systems (irrespective of type or materials used).

However, we do recognise that further research in this area may be justified, but would emphasise that any such research must take an holistic view and look closely at the role played by installation configuration, building contents and building fabric, examining their individual contribution linked directly to the timing of their relevant impacts on life safety.

Whilst there is no legitimate technical justification for the introduction of toxic-gas emission regulations at this time, the PIR industry have recognised the need for research in this area, and have taken an holistic view (as described above), by commissioning a study, examining closely the role played by installation configuration, the building contents, the building fabric and the timing of the relevant impacts on life safety.

The resultant scientific paper is attached the supporting video also available on the smoke toxicity section of the EPIC web site www.epic.uk.com. The facts are that:

- All smoke in toxic
- All combustible products, including natural products, produce toxic combustion gases
- Perceived 'non-combustible products' contain combustible components within a built-up system (such as binders and facings). These systems therefore also release toxic gases when exposed to fire
- Carbon monoxide and carbon dioxide form the major part of the decomposition of virtually all products and building materials and it is the carbon monoxide that normally constitutes the greatest hazard to life along with the "hot air" which damages the lungs
- PIR foams follow the same pattern as above, i.e. the major gases released are carbon monoxide and carbon dioxide
- As with all nitrogen containing materials (such as wool, leather, food, acrylic and nylon), hydrogen cyanide and nitrous oxides are also released when exposed to fire

The 'Technical Specification' suggested as the appropriate test methodology for the assessment of smoke toxicity is known to have significant shortcomings.

Indeed, it is also widely recognised that scaling from suggested 'bench scale tests' to real life fires is not possible. This is also well known by author of the report and the wider fire community.

As evidence of real-fire performance of PIR in buildings, we have attached a report detailing the independent fire-expert findings from various fires across the UK. This document is entitled 'The Performance of PIR core sandwich panels in real fire situations'.

Roles & Responsibilities

Q2 Are the roles, responsibilities & accountabilities of different individuals (in relation to adhering to fire safety requirements or assessing compliance) at each key stage of the building process clear, effective and timely?

AD-B is generally well received. However, due to the fact that the document is 'guidance only' rather than regulation/stipulation, the document contents are not always adhered to.

As such, the current building regulations do not stipulate roles or responsibilities adequately and the document remains as 'guidance only', which is therefore not legally enforceable. It is therefore difficult, if not impossible, to assess whether or not individuals and companies/establishments are adhering to their intended roles, responsibilities and accountabilities. Current guidance should therefore, in our opinion, be redefined in a unambiguous manner, linked to competence, with only recognised, qualified and registered individuals or companies being authorised to undertake work (at whatever level, from design to construction).

In particular:

- **Where are responsibilities clear, effective and timely and well understood by those who need to adhere to them/assess them?; and, if appropriate**

  Unfortunately responsibilities are not currently clearly defined due to the lack of regulatory requirements. Hence, responsibilities are not clearly tabled and linked to key areas of work, especially in terms of audit/assessment and sign-off.

- **Where specifically do you think the regime is not effective?**

  Unfortunately, as described above, the current system does not appear to be completely effective throughout due to a lack of mandatory regulation, and we hope that our comments provide assistance within this review process.

- **What changes would be necessary to address these and what are the benefits of doing so?**

  Clearly define and list responsibilities, linked to competence. Authorities must also be defined against each responsibility, as it is often the case that individuals are assigned responsibility, without any sufficient authority to undertake their roles effectively.

  Qualifications and competence must be linked, ensuring that only registered professionals undertake all work (from design to construction). No exceptions can be made in terms of senior design/engineering/desk-top study positions. For example, a structural engineer is not necessarily competent to undertake desk-top fire studies and should not be assumed to be purely based upon their 'related' profession.

  The benefits are clear, in that only regulated individuals or companies can then undertake work (at any level), thus allowing for competency and accountability to be judged. This will, initially, reduce the number of available people/companies, but that is the exact intention. Those individuals or companies that wish to undertake work proficiently and professionally will undertake any new qualification/certification requirements stipulated. Those that do not wish to attain this level are the exact people or companies that should be rightly excluded. This new approach will set a level base-line and will encourage competition between only proficient companies and individuals.

Q3 Does the current system place a clear over-arching responsibility on named parties for maintaining/ ensuring fire safety requirements are met in a high-rise multi occupancy building? Where could this be made clearer? What would be the benefits of doing so?

At present, we do not feel that the current building regulations adequately define responsibilities, authorities and accountabilities throughout the process. This could be significantly enhanced by setting specific tasks and procedures to be undertaken by various stakeholders involved in the design and construction of buildings.

A flow diagram would be useful to interpret the requirements and the sign off authorities at each level, with clear indications of the need for 'repeat sign-off' where amendments are made to the design or products/materials used (i.e. from the original specification).

Ultimate sign-off should be by a combination of physical assessment and confirmation of previous sign-off's throughout the complete process. This should be linked to an audit in terms of the qualifications and competencies of those involved in the sign-off process. Any missing links should result in denial of approval.

The following RIBA work stage process/analysis undertaken by TENOS could be used as a start-point, together with links to the CSCS card system detailed within this submission:

RIBA STAGE	CONSTRUCTION STAGE	PREVIOUS RIBA STAGE	FIRE ENGINEERING SERVICES
RIBA Stage 1	Preparation	RIBA Stage A/B	• Confirm the relevant fire safety design objectives for the project • Advise on key fire safety requirements • Highlight any significant site constraints • Stage 1/master plan report preparation & issue
RIBA Stage 2	Concept Design	RIBA Stage C	• Feasibility review • Fire strategy development • Review and agree the principles of an outline fire strategy at an initial meeting with the approvals bodies.
RIBA Stage 3	Developed Design	RIBA Stage D+	• Full scheme review to confirm detailed proposals accord with (Stage 2) fire safety design. • Fire engineering analysis • Address any approving authority concerns
RIBA Stage 4	Technical Design	RIBA Stage E/F1	• Technical design assistance • Update Fire engineering analysis • Fire strategy development/update • Tender assistance (if required)
RIBA Stage 5	Specialist Design	No Previous RIBA Stage	• Construction stage advice • Site Inspection/commissioning (if required) • Construction phasing fire safety review (if required)
RIBA Stage 6	Construction	RIBA Stage J/K	• Fire systems test attendance • Preoccupation fire risk assessment
RIBA Stage 7	Use and Aftercare	RIBA Stage L	• Post-occupation fire risk assessment • Fire safety management plan (FSMP)

Competencies of key players

Q4 What evidence is there that those with responsibility for:

- **Demonstrating compliance (with building regulations, housing & fire safety requirements) at various stages in the life cycle of a building;**
- **Assessing compliance with those requirements**

are appropriately trained and accredited and are adequately resourced to perform their role effectively (including whether there are enough qualified professionals in each key area)? If gaps exist how can they be addressed and what would be the benefits of doing so?

At present, building regulations do not stipulate minimum levels of competence, nor do they link to professional bodies in terms of existing qualification/certification or competency schemes. In that respect, the guidance documents are severely lacking.

3 levels of competency/certification/qualification are required:

a) Certification for products

- UKAS Accredited Factory Production Control (FPC) certification against specific product standards, or
- UKAS Accredited Quality Management System (QMS) certification to BS EN ISO 9001 incorporating FPC product standard requirements

  Note – The BS EN ISO 9001 option already incorporates FPC requirements and secondary certification is therefore not generally required. Only when Attestation level 2+ or above is required for FPC systems, is independent UKAS Accredited 'notified body' FPC certification required.

b) Certification for contractors (on-site)

- UKAS or LPS Accredited installer scheme certification (such as LP 1500 & LPS 1531)
- UKAS Accredited Quality Management System (QMS) to BS EN ISO 9001, Environmental Management System (EMS) to BS EN ISO 14001 and H&S Management System (OHSAS) certification to BS OHSAS 18001 (soon to change to BS ISO 45001).

c) Qualifications of individuals

- Professional body recognised qualifications

With regard to a) and b) above, there is currently a lack understanding with regard to certification and accreditation.

Companies or individuals are 'certified'. Certification Bodies (CBs) are 'accredited by UKAS (within the UK)' to issue certification.

In the UK only UKAS (United Kingdom Accreditation Service) is authorised to accredit certification bodies in terms of product schemes/standards, assurance standards etc.

Equivalent authorities exist for other Countries (i.e. 1 authorised accreditation service per country). This bodies are listed on the International Accreditation Forum (IAF) web site http://iaf.nu/. These bodies hold equivalent status, as do the companies that they have certified.

However, there are many non-accredited bodies that claim to offer the same level of service to potential clients (i.e. construction companies).

These non-accredited certification schemes allow companies to claim that they have certification against a product standard (manufacturer based) or quality assurance standards (such as BS EN ISO 9001, 14001 or BS ISO 45001), whereas the certification is actually meaningless and could be issued instantly, without any form of assessment, by unregulated certification bodies.

DCLG have the absolute right to stipulate minimum standards and link these to recognised UK Authorities such as UKAS.

In terms of minimum standards for item c (previously listed above - including all perceived high-level job functions such as designers, desk-top study professionals, engineered design consultants etc.), this can be linked through the existing ConstructionSkills CSCS card scheme, already supported by UK Government.

Specific fire related qualifications such as those operated by the Institute of Fire Engineers, The Fire Protection Association, and Passive Fire Protection Federation schemes. Other non-fire related construction qualifications already link in this manner to the CSCS scheme.

At present, it is not mandatory to hold CSCS cards, although most main contractors do now require this. However, gaps exist with regard to the system, as not all job functions are covered by CSCS cards, and not all cards require minimum 'fire safety' competency, which therefore, for example, allows plumbers or electricians to interfere with existing fire-related structures or components (including all types of panels) to undertake their job functions, without any knowledge or requirement for them to understand how their actions can adversely affect the fire-integrity of the original construction or product.

Additionally, at present, anyone can create a company and market themselves as a fire assessor, expert or design consultant. No recognised qualifications or minimum criteria exist, even for desk-top studies or engineered design consultants.

Minimum criteria could be inserted into all relevant CSCS card schemes/job functions in terms of fire competence, and CSCS cards could be made mandatory. For example, electricians or plumbers that are likely to penetrate insulated panels or other fire-related structures or components should be required to have knowledge and competence with regard to their impact upon the products that they encounter.

Training/competence in this area should be made mandatory, and individuals must pass this element of the CSCS card tests/assessment before they are granted approval. The card would then reflect their fire-related competencies as well as their key-role of being an electrical or plumber etc.

For the crucial/key roles, fire qualifications (beyond initial competence/knowledge) should be linked to CSCS card schemes. This would include exacting and recognised qualifications issued by recognised professional bodies.

Enforcement & Sanctions

Q5 Is the current checking and inspection regime adequately backed up through enforcement and sanctions? In particular

- **Where does the regime already adequately drive compliance or ensure remedial action is always taken in a timely manner where needed?**

  Unfortunately, as AD-B is currently guidance only, no enforcement or sanctions exist.

- **Where does the system fail to do so? Are changes required to address this and what would be the benefits of doing so?**

  At present, AD-B does not detail any requirements for enforcement or sanctions. Hence, the system does not call for or allow such action. These comments links to those previously outlined within Q3 & 4.

  In terms of sanctions, reference should be made to the Belgium regional approach to building regulations, whereby Government sanctioned inspectors examine all elements of the build, the building and those undertaking the work for compliance against specification and building regulations.

  Where issues are found (i.e. non-compliances) within elements of the building (including if/when any part of the design or construction has been undertaken by non-approved/qualified/regulators individuals or companies), the relevant area or products/system/materials would be removed and the main contractors asked to replace them. Fines would then also be imposed in addition to the above, for each instance where a failure has occurred.

  We have attached a document entitled 'PU16-273 Presentation…' that includes the specifics of the above system.

  All work undertaken (whether private or public) should be subject to the above.

  Final sign-off authority and the right to impose sanctions must be given to the inspectors, who themselves must be professionally regulated.

  Another good example is the United Arab Emirates (UAE) (a country that has been subjected to a number of high profile fires over the last decade). The UAE Civil Defence have worked with global experts to develop a new 'Life and Fire Safety' Code of Practice that will be enforced from January 2018. This code calls for large scale wall and façade system tests (which includes an option for BS8414) for low and high rise buildings regardless whether the insulation is classified as combustible or not.

  The regulatory system also allocates responsibilities to various stakeholders in the construction industry and asks them to sign a declaration sheet for every project to verify that they have carried out their tasks proficiently. This is a legal document and therefore enforceable. There are sanctions and penalties for those that do not adhere to the new rules that come into place next year.

  Finally, the UAE have also outlined their 'approved' testing laboratories. Tests carried out by these labs are valid only. All other tests are invalid and cannot be used to demonstrate compliance to the new UAE life and fire code.

The benefits are clear. The construction industry has often put cost before safety which needs to urgently change. If robust benchmarks are set, companies that adhere to these benchmarks can compete and provide safer practises and solutions to the construction industry.at present, seeks to cut-corners and has done so for countless years, again pandering to the lowest common denominator or lowest cost-model. This can only be changed by regulation, as the industry has been proven not to act on guidance alone.

Building control inspectors must be given the support, resource, responsibility and authority to undertake their role effectively.

Tenants' & Residents' Voice in the current system

Q6 Is there an effective means for tenants and other residents to raise concerns about the fire safety of their buildings and to receive feedback? Where might changes be required to ensure tenants'/residents' voices on fire safety can be heard in the future?

Building regulations does not cover onward occupancy issues.

Management companies or building owners could be required to register via a separate Government scheme, linked to insurers with DCLG input.

An appropriate solution may be that insurer led management/tenant/residents schemes could be audited annually as part of the owner or management company insurance renewal. Insurance inspectors could audit the systems in-place and talk to residents groups to compare/contrast issues arising to those actually recorded and actioned.

If this was operated properly, if/when owners/management companies cannot demonstrate suitable records and action taken, their insurance premiums would rise or their renewal proposal rejected. This would then form the process of improvement. Again, guidance alone is ineffective.

Quality Assurance and Testing of Materials

Q7 Does the way building components are safety checked, certified and marketed in relation to building regulations requirements need to change? In particular:

- **Where is the system sufficiently robust and reliable in maximising fire safety and, if appropriate**

  Unfortunately, the system is not sufficiently robust at present, and is 'guidance-upon guidance' based, thus allowing different products and materials to be used outside of the mainstream guidance which was intended. This extends to products/systems that do not meet current test standards being included by means of 'fire engineering' or 'desk-top studies'. As such, the current system allows an individual's opinion to override test data and has been proven to be ineffective by the recent BRE BS 8414 test regime undertaken.

  Exacting test data and regulations should be stipulated.

- **Where specifically do you think there are weaknesses/gaps? What changes would be necessary to address these and what would be the benefits of doing so?**

  At present, building regulations do not stipulate minimum levels of competence, nor do they link to professional bodies in terms of existing qualification/certification or competency schemes. In that respect, the guidance documents are severely lacking.

  3 levels of competency/certification/qualification are required:

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As evidenced from the recent DCLG/BRE BS 8414 large-scale testing regime, it is clear that the 'alternative methodology to the BS 8414 test required to demonstrate compliance with BR135', defined within AD-B sections 12.6 to 12.9 and including diagram 40, for categorisation of products/systems/materials under the A1-F rating via the various and numerous test options available (which then leads on to 'Class O Limited combustibility' criteria under AD-B) is flawed, and in our opinion, should simply be replaced by compliance to BR135 being satisfied by BS 8414 testing only for buildings with a storey above 18m (as per section 12.5 of AD-B), with extrapolation from only base-BS 8414 tests allowable.

Currently, 8 different tests (proven not to be equivalent to BS 8414, i.e. less robust tests) exist within 12.6 to 12.9 of AD-B, and have been used to present certain products/systems/materials as compliant, when in reality they are widely accepted by the construction industry and professionals as not been appropriate for use on buildings with a storey above 18m.

In terms of evidence, the recent DCLG/BRE testing regime proved that products/systems/materials certified via the 'alternative standards' (listed below) and in-use on thousands of 'current AD-B compliant' buildings across the UK did not pass the requirements for BR135 when tested to BS 8414 specification.

This is clear and irrefutable evidence of a need to move to mandatory BR135 compliance demonstrated only via the BS 8414 test specification methodology and certification process for buildings with a storey above 18m.

Note: The 8 alternative tests available instead of the BS 8414 route are BS 476, part 4, 6, 7 or 11 OR BS EN ISO 1182, BS EN ISO 1716, BS EN 13823 or BS EN ISO 11925, part 2

As an example of the flaws of the current system, some of the BS 476 tests referenced above use a radiant heat source within the test process, even though it is recognised that this applied heat does not replicate that seen within a real fire.

As such, under these test conditions aluminium does not reach its melting point of 660 Deg C. However, if/when a real fire occurs, the melting point of aluminium will be exceeded, thus exposing the core material of the Aluminium Composite Material.

Currently, compliance with AD-B Class O can currently be confirmed via the above BS 476 test methodology, thus legitimately allowing a product's use on buildings with a storey above 18m.

Desk-top studies and engineered design routes have also been proven to be flawed and not equivalent to the BS 8414 test process serving to provide compliance to BR135. This is evidenced by the fact that products/systems in-use on numerous buildings across the UK, approved by this route, have failed the recent DCLG/BRE BS 8414 test regime.

At present, desk-top studies and engineered fire routes can exclude actual test-data and can instead be replaced by designs based purely upon the author's opinion. Furthermore, studies such as these have been proven to be in-place from companies not listed as approved designers by AD-B and its supporting guidance (Technical Guidance Document 18 refers). This is completely legitimate and allowable, as AD-B and the supporting TR18 document are both only classified as guidance and as such can be ignored.

Hence, in our opinion, desk-top studies and engineered routes should, in future, only be allowed if base-BS 8414 test data exists, and only if competent/authorised personnel are used to extrapolate the information. Studies/designs without test data should no longer be valid. Additionally, the process and format of desk-top studies should be structured and normalised by the creation of a BS EN ISO standard to specify the specific requirements for this key construction/design process.

A change to the specification of 'BS 8414 and only base-data extrapolation' for buildings above 18m would give confidence to the public and the wider industry in terms of clients, engineers, architects and contractors.

Furthermore, it should be noted that very similar BRE approved/certified large-scale test criteria (LPS/FM Global tests) already exists for products/systems/materials for use below 18m. LPS/FM standards are well established, acknowledged and specified worldwide.

Hence, in summary by specifying the following criteria as mandatory, and without alternatives, the building regulations can be reinforced and made fit-for-purpose quite easily:

- **Above 18m – (i.e. buildings with a storey above 18m) -** BS 8414 testing to demonstrate compliance with BR 135, with extrapolation from base BS 8414 tests available when performed by approved/competent and individuals possessing 'stipulated levels of qualification'. Extrapolation is allowed for variations in terms of size, shape, thickness, fixings, penetrations, colour, aesthetics, but not constituent material changes.

- **Below 18m** – LPS or FM Global testing with extrapolation as above

With regard to our call for BS 8414/LPS & FM testing and extrapolation for all products/systems/materials, please be assured that our technical interpretation is not market driven, but instead is intended to provide a technical solution to the whole construction industry. Indeed, some sectors and companies within the PIR industry that we represent cannot currently offer BS 8414 solutions, but are 100% behind the need to tighten regulation in order to avoid a repeat of the tragic events witnessed at Grenfell.

Please see attached our explanatory documents in support of BS 8414 & LPS/FM Global testing and the standards they cover. These tests apply to ANY material and ANY product/system in-use and thus provide a constant and consistent method of assurance.

Differentiation within the current Regulatory System

Q8 What would be the advantages/disadvantages of creating a greater degree of differentiation in the regulatory system between high-rise multi occupancy residential buildings and other less complex types of residential/non-residential buildings?

- **Where specifically do you think further differentiation might assist in ensuring adequate fire safety and what would be the benefits of such changes?**

  The same level of regulation should exist. It is only the test-requirements that change. Please see our previous comments contained under Q7.

International Comparisons and Other Sectors

Q9 **What examples exist from outside England of good practice in regulatory systems that aim to ensure fire safety in similar buildings? What aspects should be specifically considered and why?**

Belgium regional systems in terms of compliance, assessment and sanctions (details included within the submission attachments).

Recent changes to UAE building control requirements that now call for specific large-scale test methodology in a very similar manner to that stated herein (for low and high-rise constructions). Please see attached 'UAE Chapter 1' that details this further.

Additionally, the UAE Life and fire code can be found here: https://www.dropbox.com/s/j2ji37eixaxi825/UAE%20Fire%20%26%20Life%20Safety%20Code%20of%20Practice%20_2017_Final.pdf?dl=0

Q10 **What examples of good practice from regulatory regimes in other industries/sectors that are dependent on high quality safety environments are there that we could learn from? What key lessons are there for enhancing fire safety?**

Regulation is the key.

As an example, in terms of H&S legislation, asbestos is controlled effectively and efficiently by the HSE. This is regulated in terms of training, competence, qualification and certification.

Only qualified companies/individuals can carry out work, and all relevant construction staff are trained based upon their potential impact or exposure.

The same principles can be applied/replicated to fire safety quite easily. Please see our comments contained within Q1-7 herein.