

The dangers of external cladding fires in multi-storey buildings

External cladding fires can have devastating effects on human life, business and property. If a fire in a room on a lower storey of a multi-storey building breaks out of a window or door opening, there is potential for fire to spread quickly up the external cladding system and break back into the building through windows in upper stories. The same concern applies with an accidental or malicious external fire started in a wheelie bin or an area of stored materials. This form of fire spread has the potential to escalate rapidly potentially breaching compartmentation within the building, reducing the time or options available for evacuation and the ability to contain the fire.

As well as people in the building, individuals on the ground such as fire fighters and evacuating occupants face potential risks from the collapse of a building's cladding system or flaming debris from the system as a result of fire. The performance of cladding on external walls when exposed to fire is therefore a key concern when assessing risks to people and property.

Such issues, including limiting the spread of fire via external cladding are addressed in Approved Document B (AD B) of the Building Regulations in England and Wales (and similar documents in Scotland and Northern Ireland).

AD B guidance states that any product used in the external wall construction (except for gaskets, sealants and similar components) in buildings with a storey 18m or more above the ground, must be of limited combustibility. This is because of the increased risks associated with external flame spread on buildings of this size.

Many of the current building products with lower environmental impacts are combustible and for a cladding system, it is possible to demonstrate compliance with AD B by testing the cladding system as a whole (to BS 8414), and satisfying the performance criteria set out in the publication, *Fire performance of external thermal insulation for walls of multi-storey buildings* (BR 135) produced by BRE Global.

The performance-based approach in BR 135 allows building professionals to use new and innovative materials with low environmental impacts whilst maintaining fire safety.

The test method in BS 8414 was developed to demonstrate that, under a simulated fire in a compartment breaking out of an opening in the external wall, the cladding system will not permit excessive fire spread up the outside of the building.

The provisions of AD B are focused on life safety. Insurers and building owners may want an enhanced performance specification in order to further reduce the risks to property and business continuity. In these cases it is possible to further assess a cladding system to Loss Prevention Standards, 1581 (for buildings supported on masonry frame) and LPS 1582 (buildings supported on steel frame). Published by LPCB, the third-party certification body incorporated into BRE Global, these standards use the test methodology in BS 8414 and were developed in conjunction with the insurance industry. They require a higher level of system performance under fire conditions where the extent of the fire damage is critical in the context of property damage and the continuity of business operations.

Specifiers are increasingly choosing cladding systems that are properly tested, installed and maintained. Independent third-party certification of external insulated cladding systems can increase the confidence in the performance of the systems, further reducing the risks to businesses and property.

'Fire performance of external cladding systems – Part 1'. BRE 135 (second edition) is available from: www.brebookshop.com

All LPCB approved products and standards are listed in The Red Book and online at: www.RedBookLive.com

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[Photo captions:]

- **Fire tests can be carried out in purpose built facilities at BRE. This photograph shows a demonstration calibration test.**
- **Once ignited, the combustion chamber acts like a window with the flames travelling out and up the sample.**
- **The temperature, height and speed of flame spread will be taken into account when the results are assessed.**

Tony Baker is Certification Scheme Manager – Passive Fire Protection

Notes for Editors

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Tony Baker ('job title') discusses the importance of the fire safety of cladding in multi-storey buildings