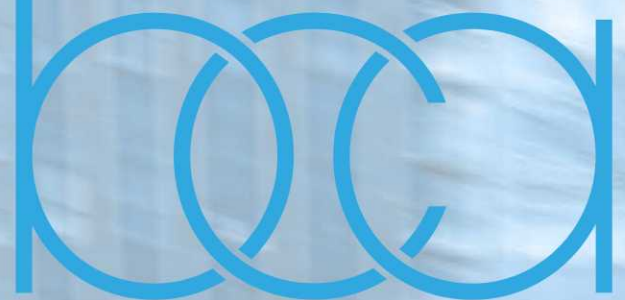


**Use of combustible  
cladding materials  
on buildings  
exceeding 18m in  
height**

# 18

**Issue 01.01  
October 2019**

**Fire Safety:  
External walls**



**Building Control Alliance**

## Purpose | BCA Technical Guidance Note 18

BCA technical guidance notes are for the benefit of it's members and the construction industry, to provide information, promote good practice and encourage consistency of interpretation for the benefit of our clients. They are advisory in nature, and in all cases the responsibility for determining compliance with the Building Regulations remains with the building control body concerned.

This guidance note is based upon information available at the time of issue and may be subject to change. The Approved Documents should be consulted for full details in any particular case.

**Status** | BCA Technical Guidance Note 18[illegible]

**Notes on issue status:**

A minor amendment is issued as an incremental point on the original and is in the form of 18.01.01, where the first number is the TGN number, the second is the issue and the third is the minor revision to the issue.

A major rework or change in guidance is given a new issue number, this would be in the form of 18.02.00 for a full re-issue.

Minor revisions are issued retaining the main issue number with a sequential revision number, this would be for updating standards or correction of errors. This would be in the form of 18.01.01 for the first minor revision to the first issue

**Always ensure you are using the most recent Guidance Note, these can be referenced at the BCA website:**

### Conventions used within this document:

- Websites and links are shown in dark **blue underlined bold text**.
- Standards and referenced documents are shown in **bold text**.
- Defined terms within the glossary are shown in **light blue bold text**.
- Section and diagram references are shown in **purple text**.

## Subject Area | BCA Technical Guidance Note 18



## Scope | BCA Technical Guidance Note 18

This technical guidance note **does not apply to** buildings in England that are subject to the changes introduced to The Building Regulations 2010 by the **Building (Amendment) Regulations 2018** which included new regulations 7(2), 7(3), 7(4) and 5(k).

For any building in England that **is not subject to** the **Building (Amendment) Regulations 2018** and for all buildings in Wales, this guidance note may be used to consider compliance in association with additional information published by the relevant government during autumn 2018:

- Circular letter for England:  
<https://www.gov.uk/government/publications/assessments-of-external-wall-cladding-systems>.
- Circular letter for Wales:  
<https://gweddi.gov.wales/topics/planning/buildingregs/circulars/building-regulations-circular-wgc-010-2018/?lang=en> in English; or in Welsh:  
<https://gweddi.gov.wales/topics/planning/buildingregs/circulars/building-regulations-circular-wgc-010-2018/?lang=cy>

## Introduction | BCA Technical Guidance Note 18

Section 12 of **Approved Document B Volume 2 (ADBv2)** gives guidance on the acceptable use of combustible materials within the external cladding system.

Where a building has a storey 18m or more above ground level **ADBv2** recommends (for the entire wall area both below and above 18m) either the use of materials of European class A2-s3, d2 or better for all key components or to submit evidence that the complete proposed external cladding system has been assessed according to the acceptance criteria in **BR135 - Fire Performance of External Thermal Insulation for Walls of Multistorey Buildings**. This guidance note outlines both procedures in more detail and addresses common misconceptions relating to combustibility and surface spread of flame ratings.

## Key Issues | BCA Technical Guidance Note 18

Fire spread via the external wall medium is exacerbated by the use of combustible materials and extensive cavities. The speed by which a flame rises vertically up the external face of a building leads to potentially rapid fire spread from lower floors to higher ones. Within the confines of a cavity, the flame will also elongate up to ten times its length as it searches for oxygen. Hence, the need for robust cavity barriers, restricted combustibility of key components and the use of materials with a low spread of flame rating is necessary, particularly given the delamination and spalling nature of some of the components when heated.

Statutory guidance addresses these issues for the initial stages of a fire, after which time it is assumed that the fire brigade have arrived to deal with the incident. However, even with the fire brigade's arrival, a fire which cannot be reached within 18m of the street level is unlikely to be easily tackled using current fire brigade apparatus and so additional safeguards are necessary for taller buildings.

A Surface Spread of Flame Classification does not infer any resistance to combustibility, it is solely a measure of the spread of a flame across the surface.

- Thermosetting insulants (e.g. rigid polyurethane, polyisocyanurate, polystyrene foam boards) do not usually meet the European class A2-s3, d2 requirements of **ADBv2** and so should not be accepted as meeting **ADBv2** paragraph 12.6. However, if they are included as part of a cladding system being tested to **BR135** & **BS8414**, the complete assembly may ultimately prove to be acceptable
- The **BR135** / **BS8414** tests deal solely with the spread of fire once it has entered the cavity. Hence, the requirements for cavity barriers in accordance with Section 9 of **ADBv2** are required in all cases including around openings in the façade

## Guidance | BCA Technical Guidance Note 18

Where the building doesn't have a storey 18m or more above ground level, there is no restriction on the combustibility of the components of the cladding system. However, cavity barriers in accordance with Section 9 and Diagram 30 will still be needed.

Where the building has a storey 18m or more above ground level, the **BCA** recommends four options for showing compliance with paragraph 12.6 of **ADBv2** -

### Option 1

The use of materials meeting European class A2-s3, d2 for all elements of the cladding system both above and below 18m. This includes the insulation, internal lining board and the external facing material. Smaller gasket parts and similar low-risk items can be excluded from this requirement.

## Option 2

An acceptable alternative approach (see **ADBv2** paragraph 12.3) is for the client to submit evidence to the **Building Control Body** that the complete proposed external cladding system has been assessed according to the acceptance criteria in **BR135 - Fire Performance of External Thermal Insulation for Walls of Multistorey Buildings**.

The preferred method of demonstrating compliance is via a fire test carried out in accordance with **BS8414-1 Fire performance of external cladding systems – Part 1: Test method for non-loadbearing external cladding systems applied to the face of the building** or **BS8414-2 Fire performance of external cladding systems – Part 2: Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame**. The test should be carried out by an independent **UKAS** accredited testing body.

The **BS8414** tests do not give a PASS / FAIL answer because the data obtained is used by different bodies with different minimum requirements. Hence, for Building Regulation purposes, any test using this method needs to be supported with a Classification Report for the proposed specification confirming that the acceptance criteria of **BR135** have been met. These acceptance criteria are listed in Annex A or Annex B of **BR135** and include the following:

- External fire spread—determined by a 600°C rise in temperature on the external face of the building (measured at a point approximately one storey above the fire floor) for thirty seconds or more during the initial fifteen minutes of the test.
- Internal fire spread— determined by a 600°C rise in temperature on the internal face of the building (measured at a point approximately one storey above the fire floor) for thirty seconds or more during the initial fifteen minutes of the test.
- Mechanical performance—determined by an assessment of system collapse, spalling, delamination, flaming debris or pool fires.

## Option 3

If no actual fire test data exists for a particular system, the client may instead submit a desktop study report from a suitably qualified fire specialist stating whether, in their opinion, **BR135** criteria would be met with the proposed system. The report should be supported by test data from a suitable independent **UKAS** accredited testing body and so this option may not be of benefit if the products have not already been tested in multiple situations / arrangements. The report should also specifically reference the tests which have been carried out on the product.

## Option 4

If none of the above options are suitable, the client may consider addressing this issue via a holistic fire engineered approach taking into account the building geometry, ignition risk, factors restricting fire spread etc. Such an approach would be expected to follow a recognised design code such as the **BS 7974** Application of fire safety engineering principles to the design of buildings suite of documents and be supported with quantitative analyses where appropriate.

## Key Notes | BCA Technical Guidance Note 18

- Surface Spread of Flame Classification does not infer any resistance to combustibility, it is solely a measure of the spread of a flame across the surface.
- Thermosetting insulants (rigid polyurethane foam boards) do not meet the European class A2-s3, d2 requirements of **ADBv2** and so should not be accepted as meeting **ADBv2** paragraph 12.6. However, if they are included as part of a cladding system being tested to **BR135** & **BS8414**, the complete assembly may ultimately prove to be acceptable
- The **BR135** / **BS8414** tests deal solely with the spread of fire once it has entered the cavity. Hence, the requirements for cavity barriers in accordance with Section 9 of **ADBv2** are required in all cases including around openings in the façade
- Issues of the fire-resistance performance of external cladding systems, eg in relation to boundary conditions and space separation still need to be addressed. The recommendations in Section 13 of **ADBv2** and BRE guide **BR 187** – *External fire spread: building separation and boundary distances* should be followed.

## BR 135 Systems | BCA Technical Guidance Note 18

Details of systems classified to BR 135 have been listed by BRE Global on their website where permission to publish has been given. These can be viewed at:

<https://www.bre.co.uk/regulatory-testing>

# Glossary of Terms | BCA Technical Guidance Note 18

## BCB or Building Control Body

A term used to include both Local Authority Building Control and Approved Inspectors.

## BCA

Refers to Building Control Alliance, a unique industry group made up of representatives from clients, stakeholders and all the organisations directly involved in building control in England and Wales who issued this guidance note.

## UKAS

United Kingdom Accreditation Service, the UK's national Accreditation Body, responsible for determining the technical competence and integrity of organisations such as those offering testing, calibration and certification services.

# References | BCA Technical Guidance Note 18

## **Approved Document B, Volume 2 or ADBv2**

HM Government (2019) Approved Document B Volume 2 – Buildings other than dwellings: 2019 Edition. London: RIBA Books. Also Available from [www.gov.uk](http://www.gov.uk).

## **BR 135**

BRE Report 135: Fire performance of external thermal insulation for walls of multistorey buildings: Third Edition. BRE Trust, 2013 (BR 135)

## **BR 187**

BRE Report 187: External fire spread: building separation and boundary distances: Second Edition. BRE Trust, 2014 (BR 187)

## **BS 7974**

[Additionally refers to the series of parts in BS 7974]

BS 7974:2019, Application of fire safety engineering principles to the design of buildings. Code of practice. British Standards Institution.

## **BS 8414**

[Refers to part 1 or 2 as applicable, see references below]

### **BS 8414-1**

BS 8414-1:2015+A1:2017, Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems applied to the masonry face of a building. British Standards Institution.

### **BS 8414-2**

BS 8414-2:2015+A1:2017, Fire performance of external cladding systems. Test method for non-loadbearing external cladding systems fixed to and supported by a structural steel frame. British Standards Institution.

## **Building Regulations 2010** (As amended by subsequent legislation)

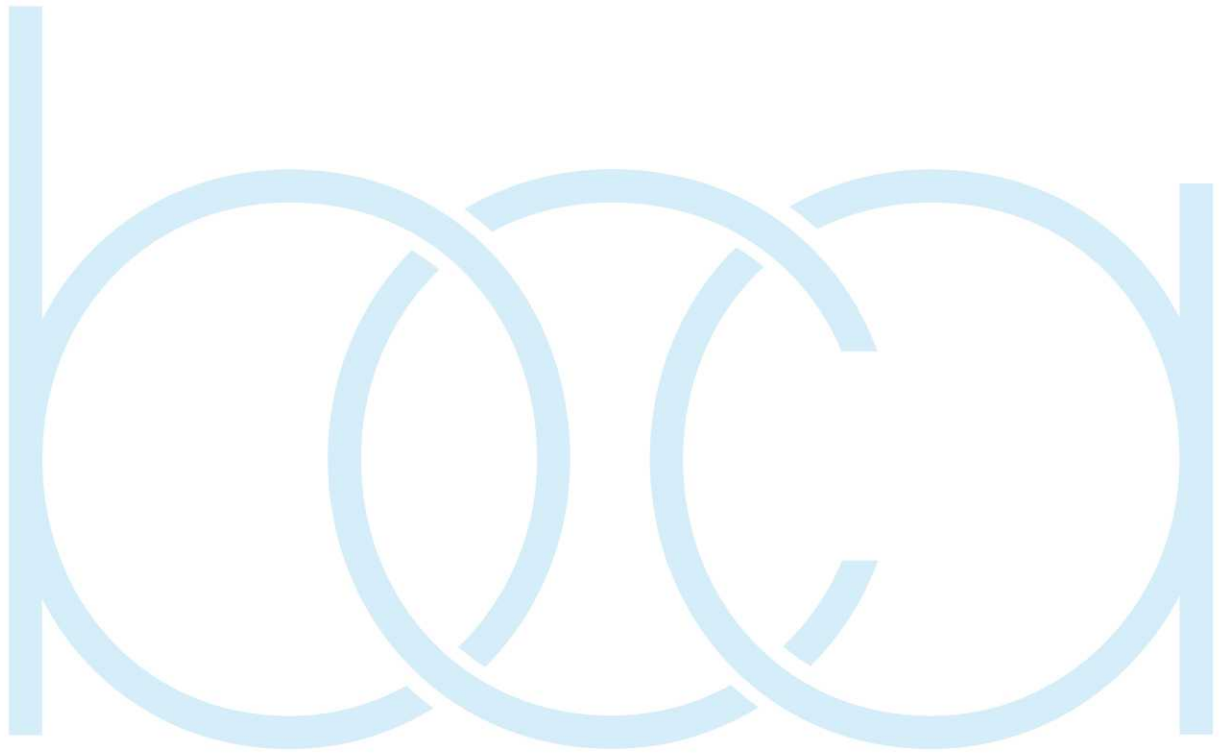
Building Regulations 2010 (SI 2010/2214), available from

<http://www.legislation.gov.uk/uksi/2010/2214/contents>

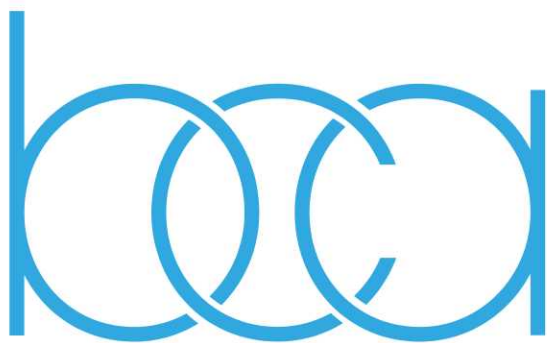
## **Building (Amendment) Regulations 2018**

Building (Amendment) Regulations 2018 (SI 2018/1230), available from

<http://www.legislation.gov.uk/uksi/2018/1230/contents/made>



# Building Control Alliance



## Building Control Alliance

The Building Control Alliance is a unique industry group made up of representatives from clients, stakeholders and all the organisations directly involved in building control in England and Wales.

It includes the organisations supporting the many thousands of building control professionals –

- Chartered Institute of Building
- Chartered Association of Building Engineers
- Royal Institution of Chartered Surveyors

and the professional associations promoting public and private sector building control –

- Local Authority Building Control
- Association of Consultant Approved Inspectors.



**[buildingcontrolalliance.org](http://buildingcontrolalliance.org)**