illbruck
making it perfect.

YOUR GUIDE

FIRE SAFETY GUIDANCE FOR BUILDING FAÇADE DESIGN

Your guide to fire safety guidance for building façade design

Buildings within the UK, must be designed to provide an expected level of fire safety and to minimise the risks from heat and smoke. Put simply, the primary objective of fire safety compliance is to limit the potential for harm to occupants or key parties such as the fire service.

Due to the complexity of builds, there is rarely a "one size fits all" approach to ensuring fire safety within building design and therefore fire safety strategies and solutions can be bespoke to every project based on numerous factors such as;

- Building size, height, occupancy and usage
- Mass
- Building facilities
- Construction materials

Whilst the primary focus, in more recent years, has been concentrated on the fire safety of taller residential buildings. The latest amends to Approved Document B, also provides guidance on how to meet building regulations in other common building scenarios.

Fire Safety Classifications for Building Membranes

In 2002, in order to harmonise the classification of the reaction to fire for building materials, the European Commission introduced the Euro Fire Class System (commonly referred to as Euroclass) based on EN ISO 13501-1. This Euroclass system provides a common classification framework for building products based on their reaction-to-fire performance. The framework looks at (but is not limited to) the reaction for:

- Ease of ignition
- Spread of flame
- Evolution of smoke and toxic gases
- Heat release
- Rate of the burning material

In the UK, BS EN 13501-1, has now become the standard reference in the Building Regulations for classifying the minimum reaction to fire performance for all building materials used in the external envelope of a building.

TREMCO
Construction Products Group

FIRE SAFETY GUIDANCE

Understanding the Fire Class System - Euroclass

In the Euroclass system, materials are divided into seven classes on the basis of their reaction-to-fire properties; A1, A2, B, C, D, E and F.

Euroclass	Target Safety Level	Examples of Materials / Products
A1	Products that will not contribute in any stage of the fire including the fully developed fire.	Natural stone, concrete, bricks, glass and steel
A2	Products capable of resisting, for a period, a small flame attached without substantial flame spread and under thermal attack by a single burning item have a limited lateral spread of flames. Under the conditions of a fully developed fire these products will not significantly contribute to the fire load or fire growth.	Products similar to those of Class A1, including a limited amount of organic content.
B	Products capable of resisting, for a period, a small flame attached without substantial flame spread and in addition, under thermal attack by a single burning item have a limited lateral spread of flames.	Gypsum boards with thin surface linings
C	Products capable of resisting, for a short period, a small flame attached without substantial flame spread and in addition, under thermal attack by a single burning item have a limited lateral spread of flames.	Phenolic foam insulation
D	Products capable of resisting, for a short period, a small flame attached without substantial flame spread and in addition, are capable of undergoing thermal attack by a single burning item with sufficiently delayed and limited heat release.	Wood products with thickness greater than or equal to 10 mm / density greater than or equal to 400kg/m2
E	Products capable of resisting, for a short period, a small flame attached without substantial flame spread.	Plastic Insulation Products
F	No requirements concerning reaction to fire	Not Applicable

Classification of Smoke Development

- s1 – the total smoke production as well as the ratio of increase in smoke production are limited (≤ 30 m2/s2)
- s2 – the total smoke production as well as the ratio of increase in smoke production are limited (≤ 180 m2/s2)
- s3 – no limitation of smoke production requirement

Classification of Building Droplet

- d0 – No flaming droplets or particles occur
- d1 – No flaming droplets or particles persist longer than a given time (> 10 seconds)
- d2 – No limitation

Euroclass Requirements for Building Façades

For a relevant building in England and Wales, the current building regulations require that the materials which become part of an external wall are Euroclass A2-s1, d0 or A1.

However, breather membranes installed on the exterior side of a building behind the cladding and air and vapour control layers (AVCL) installed on the interior side of a building are currently classified as exempt under these regulations. However, membranes used as part of an external wall construction should achieve a minimum of Class B-s3, d0.

It is expected that requirement will be further review over the coming years, as the availability and supply of A2 and A1 membranes become more prevalent in the industry

What system should you install on your building façade to ensure compliance to latest regulations?

As the building façade plays such a critical piece within the design of a building, it is always the recommendation of illbruck that architects and specifiers, use a system which is complaint with building regulations with the UK.

ME010 Breather Membrane, when installed as a full façade breather membrane over substrates with a minimum class A2-s1, d0 fire performance, achieves a Class B-s3, d0 in accordance with EN 13501-1. This breather membrane is compliant with the regulatory requirements described within Approved Document B for "relevant buildings" within England and Wales.

If you would like any further information on alternative systems, please contact a member of the illbruck specification team.

Are regulations surrounding fire classifications likely to change?

In April 2022, the government's Building Safety Bill completed the parliamentary stages in both houses to become an Act of Parliament – The Building Safety Act.

This act gives residents more power to hold builders and developers to account and toughen sanctions against those who compromise safety. A new "building safety regulator" will be at the heart of the reforms, overseeing the "safety and performance of all buildings", and implementing the new, more stringent regulatory regime for higher risk buildings. The regulator will be expected to encourage competence among the built environment industry, and registered building inspectors.

Stricter oversight is likely to have an effect throughout the construction supply chain, especially with regards to a critical area of external wall systems in high-rise buildings. Fire safety experts believe that improvements should be made within a building's façade design and "best practices" should be adopted in line with building regulations at the time of design.

STAYING AHEAD OF THE CURVE

How can illbruck support you in staying ahead of the curve in fire safety design?

The topic of fire safety will remain a key one as we progress in the future of construction, along with wider building safety standards covered by the building safety act. The team at illbruck, are aware that further legislation will be discussed and introduced that will have an impact on the way in which we design and specify buildings.

It remains our priority to ensure that building developers, building owners and architects have the ability to adapt to and meet with new guidance as it is released, whilst being able to advise our customers of changing standards – giving you the faith that illbruck is offering the best possible and most compliant solutions for building schemes across the United Kingdom.

Achieving new standards

Membranes

To achieve the required standards, suitable products should be chosen and specified for the installation at the design stage. We can support you with selecting the right solutions and systems for your project.

ME010

FR Window & Door Sealing Membrane

- Class B-s3, d0 or B-s1, d0 when bonded with SP025 Adhesive
- Permanently UV-resistant
- Highly water resistant, exceeds W1
- Air and weathertight
- Pass – 2 kPa for 24 hours
- Multiple widths available
- SKU - ME010

ME014

FR Breather Membrane (BLACK)

- Reaction to Fire Class B-s3, d0 or B-s1, d0 when bonded with SP025 FR Adhesive
- Permanently UV-resistant
- Highly water resistant, exceeds W1
- Breather (vapour-open)
- Ideal for open or partially open façades
- Airtight and weathertight
- 75m2 (1.5m x 50m)
- SKU - ME014

ME050

FR Breather Membrane (ALU)

- Class A2-s1, d0
- Highly Breathable
- Water Resistant (Class W1)
- UV Resistant
- Airtight
- 60m2 (1.2m x 50m)
- SKU - ME050

ME055

FR Breather Membrane (WHITE)

- Class A1 (Non-combustible)
- Highly Breathable
- Water Resistant (Class W2)
- 75m2 (1.5m x 50m)
- SKU - ME055

ME060

FR AVCL

- Class A2-s1, d0
- 95% heat reflection
- Air and vapour tight
- Suitable for use in lightweight steel and timber frame construction
- 60m2 (1.2m x 50m)
- SKU - ME060

ME480

BUTYL FAÇADE SEALING TAPE

- Class B-s1, d0
- Suitable for low thresholds and balcony details, where there is risk of standing water is prevelant.
- Aluminium foil finish with a siliconised release liner
- Both aluminium foil and the butyl adhesive layer are UV-resistant
- Very high vapour and water resistance
- Accomodates movement
- Pass – 2 kPa for 24 hour
- SKU - ME480

HANDY NOTES

key takeaways
glossary

Quick Glossary

ADF	Approved Document F
ADL	Approved Document L
ADO	Approved Document O
AVCL	Air & Vapour Control Layer
BREL	Building Regulations England Part L
EPC	Energy Performance Certificate
Fabric First Approach	Maximising the performance of the materials that make up the fabric of the building
FBS	Future Buildings Standard
FHS	Future Homes Standard
FR	Fire Rated
Limiting U-Value	Lowest acceptable level of performance
VCL	Vapour Control Layer

Further reading

Documents are available from the gov.uk website:

Approved Document F
Approved Document L
Approved Document O

illbruck support

Talk to our expert team who can provide you with solutions for specifying the right products, integrating airtightness and thermal bridging as part of the building design, and application support.

Our technical team, alongside our CPG Training Academy, are here to help you when you need it:

- Site visits
- CPD seminars
- Toolbox talks
- Demonstrations
- Detailed drawings
- Product specification
- Third party reports and CPG test facilities for airtight & weather-tightness testing
- In-house compatibility testing for interfaces

Future Homes Standard 2025
Future Buildings Standard 2025

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