



ALUMASC ROOFING

Guide to

EXTERNAL FIRE EXPOSURE FOR FLAT ROOFS



WHY ALUMASC?

Alumasc is a leading provider of exceptional products and solutions for new build and refurbishment projects. We have a wealth of experience in dealing with key clients and customers across all building sectors to deliver a quality service from pre-planning through to completion.

Our primary objective is to mitigate the client's risk, by providing:



The Right System Choice

With our varied and extensive range of products, we can always meet your project's needs with an appropriate solution.



Efficiently Designed

We will assist through all design stages, by collaborating with the relevant parties to meet your project's requirements and support you throughout with our comprehensive technical advice.



Correctly Installed

Our trained contractors are experienced in our installations and are monitored continually by Alumasc Site Technicians for your peace of mind.



Warranties

A comprehensive range of single-source warranties are available for up to 40 years (depending on the solution) covering the product, workmanship, and design.



Post-Project Handover

For all you need to know about your roof and its installation.



Aftersales Support Service

Should you need us to support you in the future.

As part of our service, a technical manager will be appointed to your project who will be your primary point of contact, reviewing each delivery and coordinating all the internal resources your project needs. You will be regularly updated on progress and supported throughout the entire project by your dedicated contact.

If you wish to hear more about our solutions and how we are working towards a better future, then please do not hesitate to get in touch with us at info@alumascroofing.com.

Our portfolio includes a premium range of reinforced polymer modified bituminous waterproofing membranes, single-ply membranes, hot-melt structural waterproofing, cold applied liquid coatings, green roof solutions, stormwater management and a full range of complementary accessories such as building services supports and guardrail edge protection systems.

OUR PRODUCT SOLUTIONS



CONTACT US:

For Specifications, Technical, Project Quotations,
Customer Service & Sales Orders



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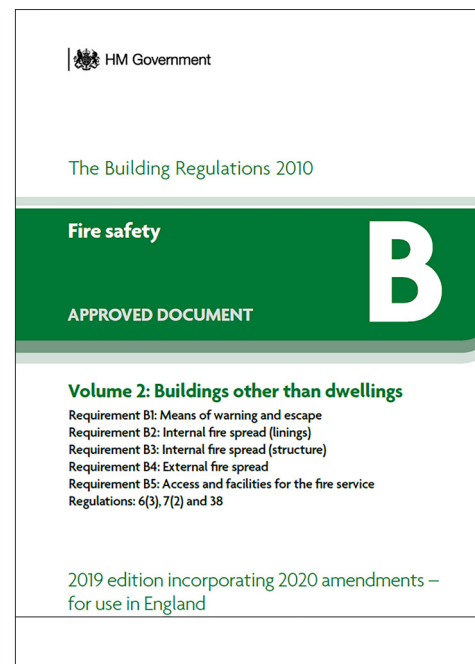
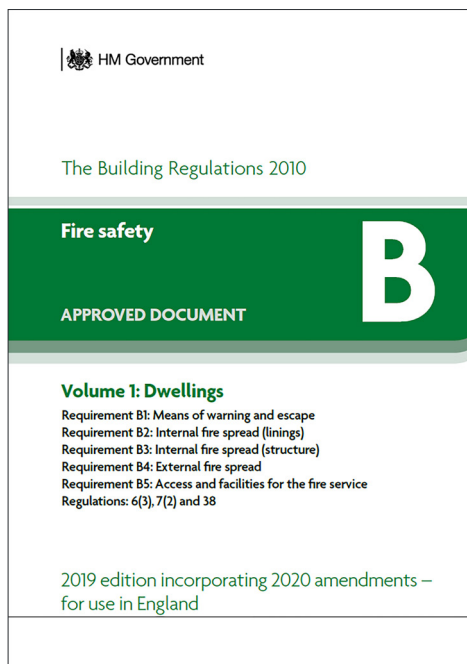


www.alumascroofing.com

INTRODUCTION

Further to the recent changes in Building Regulations incorporating changes to address the use of combustible insulations in high rise residential buildings, and the second reading of the Building Safety Bill in Parliament which will overhaul regulations, create lasting generational change, and set out a clear pathway on how residential buildings should be constructed, maintained and made safe, Alumasc present their summary of the current rules and regulations regarding external fire exposure ratings for flat roofs in general, and how they relate to Alumasc's portfolio of products.

Flat roofs are widely used in the U.K. and as part of the building envelope are required by the Building Regulations to be tested to approved methods to establish their fire rating and ensure that only suitable and safe systems are used, in accordance with **Approved Document B (fire safety) volumes 1 & 2.**

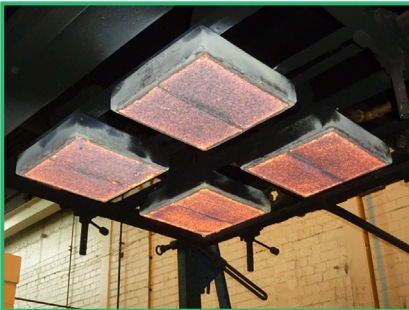


Building Regulation 7(2) states that: "It is the responsibility of the client or building owner to ensure that the building shall be designed, constructed, or refurbished so that, in the event of a fire, the external envelope of the building has sufficient resistance to prevent fire spread across the relevant boundaries in accordance with all relevant sections of the Building Regulations. In the event of any doubt, further guidance should be sought from Building Control and/or a suitably qualified fire safety officer."



TEST METHODOLOGY

The official fire test methods used in the U.K. are **BS476 Pt 3** (Classification and Method of Test for External Fire Exposure to Roofs – shortly to become obsolete) or **CEN TS 1187/4** (Test Methods for External Fire Exposure to Roofs). These tests replicate real fire conditions by simulating the effect of a burning brand landing on a roof, with localised radiant heat and wind. The photographs below illustrate the test process:



The test methodology measures both the penetration and spread of flame during a specified period, after which the performance rating of the system is determined according to the results observed in the following categories, of which **B_{Roof(t4)}** is the best, and allows unrestricted use:

Table 12.1 Limitations on roof coverings

Designation ⁽¹⁾ of covering of roof or part of roof	Distance from any point on relevant boundary			
	Less than 6m	At least 6m	At least 12m	At least 20m
B_{Roof(t4)}	●	●	●	●
C_{Roof(t4)}	○	●	●	●
D_{Roof(t4)}	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	●
E_{Roof(t4)}	○	● ⁽²⁾⁽³⁾	● ⁽²⁾	● ⁽²⁾
F_{Roof(t4)}	○	○	○	● ⁽²⁾⁽³⁾

● Acceptable.
○ Not acceptable.

Extracted from Approved Document B

Because the test is intended to replicate a real life situation, it is conducted on the full system build-up, and not the individual components. The result is therefore governed by the performance of the surfacing and is not necessarily dependent on the type of insulation and substrate below. However, should it be a requirement of the client, a non-combustible (i.e., A2-s1, d0 or Class A1 to EN13501-1) insulation product can be specified where specific fire conditions are to be met according to system type.

The individual classification (A to F) of insulation in accordance with BS EN 13501- 1:2009+A1:2009 (Fire classification of construction products and building elements. Classification using test data from reaction to fire tests) is not relevant for exposure to external fire assessments, as the rating must be for the full build-up and not any element in isolation. It is therefore normal and acceptable under the Building Regulations for insulations rated as low as F to be used within a **B_{Roof(t4)}** rated application. The exception is when used on a high-rise residential block on a 'specified attachment' (see page 8) or when used over a party wall (see Approved Document section B3).

The flat roofing fire tests mentioned above do not attempt to determine what the effect of an internal fire would be, as this is covered by other test methods and standards.

Refurbishment projects cannot be allocated a specific fire rating, as it is not possible to physically replicate a section though an existing roof for testing. Clients may however express a preference for the use of membranes which do have a **B_{Roof(t4)}** rating when used in new construction.

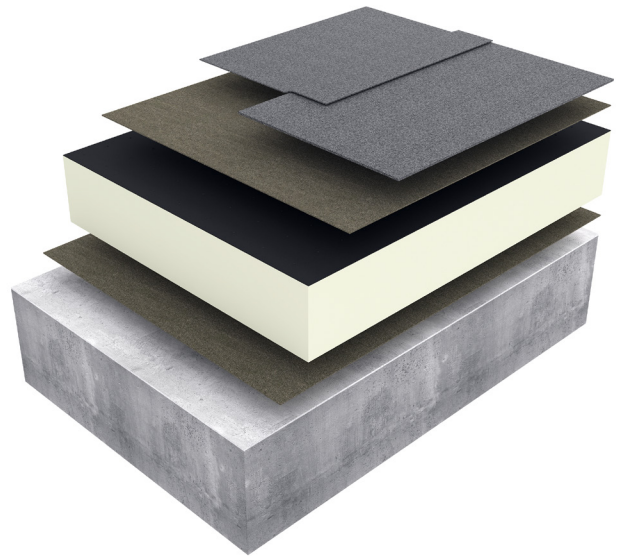
Guidance on compliance with the Building Regulation covering fire safety matters within and around buildings can be found at: [Fire safety: Approved Document B - GOV.UK](https://www.gov.uk/government/publications/fire-safety-approved-document-b).

WARM ROOFS

Roofing membranes may be of bituminous, cold-liquid, or synthetic material, and are typically installed over a thermal insulation board (i.e., "warm roofs"), the most widely used being polyisocyanurate (PIR) due to its excellent thermal resistance, keeping buildings warm in the winter, and cool in the summer.

Insulation such as mineral wool or foamed glass can be incorporated in lieu of PIR where specific non-combustible conditions are to be met, although it should be acknowledged that these products may not be as efficient an insulant as PIR, and will have a lesser or greater compressive strength depending on the product.

Typical structural decks would be profiled metal, external grade plywood, and concrete.



INVERTED ROOFS

In "Inverted roof" assemblies the insulation is typically extruded polystyrene, and is placed above the membrane, typically over a concrete deck (plus surfacing/ballast).

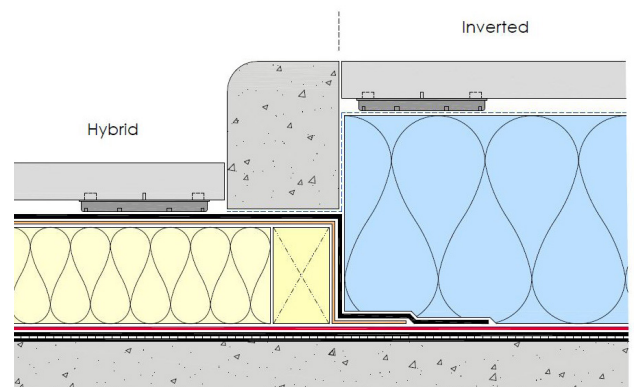
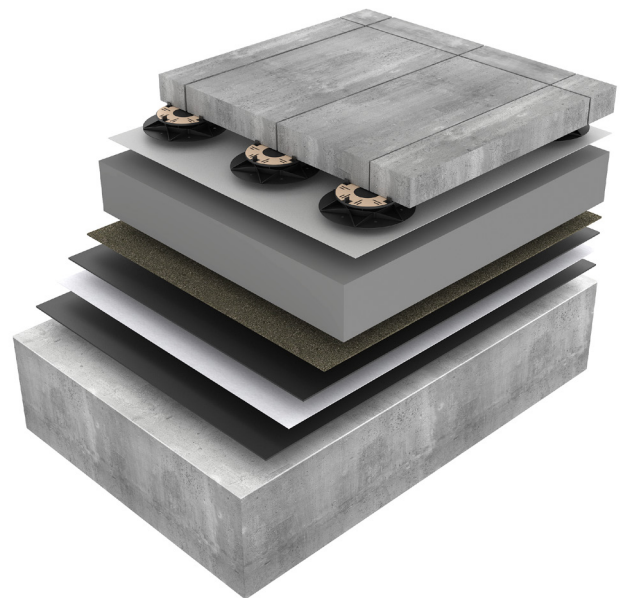
When used in protected specifications including an inorganic covering listed in the **Annex of Commission Decision 2000/553/EC** (i.e., concrete pavings or 4 - 32mm stone aggregate) can be considered to be unrestricted under the national Building Regulations. Note: this does not include the use of porcelain tiles.

However, Alumasc Hydrotech inverted roof systems incorporating extruded polystyrene insulation have been independently tested to EN 1187/4 and having achieved **B_{ROOF(t4)}** are confirmed as suitable for unrestricted use under the Building Regulations.

It is worth noting that almost all inverted roof assemblies are installed on structural concrete decks, on which the chances of penetration of flame in a fire are minimal, regardless of the type of waterproofing system employed.

Additionally, to satisfy the requirements of clients who wish to use Hydrotech inverted systems in conjunction with a non-combustible insulation, an alternative hybrid system is available in which the Hydrotech is surfaced with mineral wool and a Derbigum Cap Sheet. Paving/ballast surfacing is therefore optional in this instance.

This hybrid system has also been fire tested to **B_{ROOF(t4)}**, and both the standard system and the hybrid system are listed in BBA Certificate no 90/2431. A further variant hybrid system using foamed glass and Derbigum is also listed in this BBA certificate.



GREEN ROOFS

Whilst regulations do not provide complete clarity on green roofs, assurance of compliance is provided by a guidance document issued by the Department for Communities and Local Government (now known as MHCLG) - **Fire Performance of Green Roofs and Walls**, published in August 2013, which states in clause 4.5.2. that:

“In order for green roofs to comply with requirement B4 it is recommended that for all types of green roof the depth of the growing layer should be a minimum of 80mm and the organic content should not exceed 50%.”

The **GRO** (Green Roof Organisation, affiliated to NFRC) **Code of Practice** published in 2021 states:

“GRO recommends that the waterproofing manufacturer is consulted with regards to the fire performance of any exposed waterproofing used at parapet walls, upstand and penetrations such as rooflights; SVP's etc.

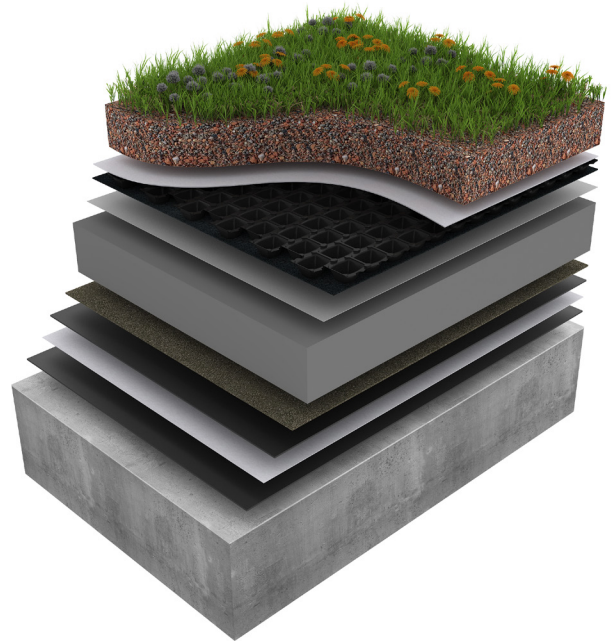
Green roof drainage/reservoir boards and filter fleeces should be completely buried beneath the growing medium and gravel margins to prevent potential exposure to fire risk.

GRO compliant growing media will provide a positive contribution to the resistance of penetration by fire due to the non-combustible nature of mineral/brick based growing media. Green roof systems can also resist the spread of flame provided they are correctly designed, installed and maintained.

Consideration must be given to any vegetation, whether at ground or roof level, to prevent the external spread of flame during prolonged periods of drought. Planting succulents such as sedum can help. For all green roofs, the use of a temporary or permanent irrigation system to prevent drying out is recommended.

The ongoing maintenance of green roofs is important to ensure that the organic content of the roof does not significantly increase over time. The green roof system supplier should be consulted for maintenance/ stewardship recommendations that will also ensure the health of a self-sustaining plant community.

To ensure that there is no danger that fire can spread or penetrate the growing medium, GRO recommend that extensive substrates should be tested in line with BS 8616:2019 and contain no more than 20% organic content by volume (with no peat) and comply to GRO guidelines (Section 3.1.5).“



HIGH RISE RESIDENTIAL

Updated guidance - ban of non-combustible materials

A High-Rise Residential Building ('HRRB') is defined as a '**relevant building**' by new Building Regulation 7(4) as follows:

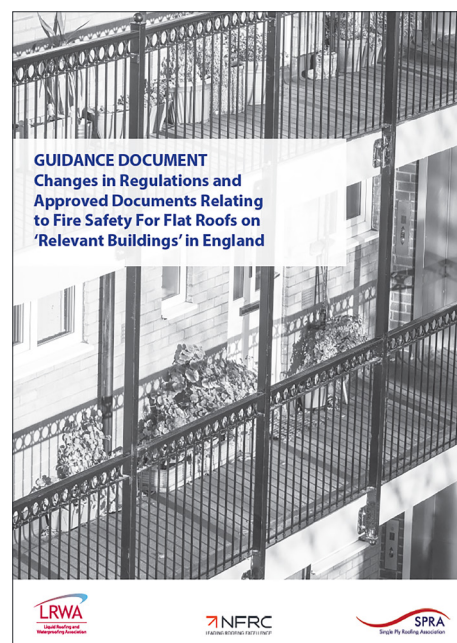
- (a) a "relevant building" means a building with a storey (not including roof-top plant areas or any storey consisting exclusively of plant rooms) **at least 18 metres* above ground level** and which -
(i) contains one or more dwellings; (ii) contains an institution; or (iii) contains a room for residential purposes (excluding any room in a hostel, hotel, or boarding house).

* may be reduced to 11m under future legislation

The new regulation states: Building Regulation 7(2) has been added to Regulation 7 of Approved Document B (Fire Safety) and states: '(2) Subject to paragraph (3), **building work shall be carried out so that materials which become part of an external wall, or specified attachment, of a relevant building [i.e. a HRRB] are of European Classification A2-s1, d0 or Class A1, [i.e. non-combustible]** classified in accordance with BS EN 13501- 1:2007+A1:2009 entitled "Fire classification of construction products and building elements. Classification using test data from reaction to fire tests" (ISBN 978 0 580 59861 6) published by the British Standards Institution on 30th March 2007 and amended in November 2009.

The essence of the ban of non-combustible materials is that:

- ✓ Membranes on balconies are exempt from the ban but must be **B_{ROOF}(t4)** rated.
- ✓ Roofs are also exempt, but where the roof attaches to a wall it can only be taken 150-300mm up the wall before the insulation has to be A2-s1, d0 or A1 rated, i.e., non-combustible.
- ✓ All roofs are required to achieve **B_{ROOF}(t4)** regardless of type of building.
- ✓ Balconies over enclosed 'habited and conditioned' spaces are defined as roofs and are therefore exempt but must still achieve **B_{ROOF}(t4)**.
- ✓ You cannot use an insulation on a "specified attachment". E.g., a balcony of a HRRB unless it is non-combustible, i.e. A2-s1, d0 or A1 rated (e.g., foamed glass or mineral wool).
- ✓ You cannot use an insulation on a wall of a HRRB unless it is non-combustible, i.e. A2-s1, d0 or A1 rated (e.g., foamed glass or mineral wool).
- ✓ The ban applies equally to balconies which are inset or cantilevered, unless they are a designated means of escape in which case, they are just required to be **B_{ROOF}(t4)** rated.
- ✓ The insulation on upstands in excess of 300mm on HRRBs must be non-combustible i.e. A2-s1, d0 or A1 rated, and therefore would have to be our A2 non-combustible board if inverted, and the membrane behind it should be **B_{ROOF}(t4)** rated (i.e., Derbigum or Mastergold Mineral used as the protection sheet). For warm roof upstands it would need to be foamed glass or mineral wool.
- ✓ See LRWA/NFRC/SPRA guidance note regarding the changes in the fire safety regs (Approved Document B), relating to 'High Rise Residential Buildings' (HRRBs) at Downloads (lrwa.org.uk) for further information. Note that the document (and this bulletin) is for guidance only, and that there is still an element of uncertainty regarding the exact interpretation of Approved Document B which the trade associations continue to attempt to resolve with MHCLG (Ministry for Housing, Communities and Local Government). **Any guidance given is therefore strictly subject to ratification by Building Control** who ultimately will decide whether a proposed specification meets the requirements of Approved Document B or not.



SAFE2TORCH POLICY

Alumasc Roofing is a registered member of the **NFRC Safe2Torch** initiative to significantly reduce the risks when using gas torches, either to dry out roofs or when used to install torch-on membranes.

We operate a Flame-Free policy, which stipulates that membranes cannot use exposed torch flame as a means of installation over or within 900mm of any combustible materials that may be present (whether visible or not), or otherwise where there is a potential hazard.

We meet this requirement by substituting cold-applied or self-adhesive products in place of torch-applied in these locations.

If a naked flame is used for drying a roof surface, it is important that all operatives using a gas torch are familiar with and understand the principles of the Safe2Torch conditions as set out by the NFRC. Where the use of a naked flame is not permitted at any stage of a contract, drying the roof surface must be completed using hot air blowers, or a other suitable alternative method that does not involve using gas torches.



**Safe2
Torch**
REGISTERED

ALUMASC POSITION

Alumasc confirm that the following roofing membrane systems have undergone external fire testing as required in accordance with CEN TS 1187/4 (Test Methods for External Fire Exposure to Roofs).

- ✓ Derbigum Reinforced Bitumen Membranes
- ✓ Hydrotech MM6125 Hot Melt Roofing
- ✓ Euroroo Premium Reinforced Bitumen Membrane
- ✓ Euroroo Torch-On Reinforced Bitumen Membrane
- ✓ Euroroo Mono Reinforced Bitumen Membrane
- ✓ Alkorplan by Alumasc PVC Single-Ply Membrane
- ✓ Caltech QC PMMA Liquid Waterproofing

All have been rated B_{ROOF}(t4) and are therefore British Board of Agreement certified as suitable for unrestricted use under the Building Regulations, as confirmed in their respective BBA Certificates*.

*Alumasc Roofing' BBA Certificates can be viewed or downloaded from [BBA/ETA Certificate Downloads | Alumasc Roofing](#)






**ALUMASC
ROOFING**



Your Complete Roofing Solution

Environmentally Focused | Responsibly Sourced | Ethically Driven

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