
**SOPREMA**
SOLUTIONS

# SOPREMA'S GUIDE TO **FIRE COMPLIANCE**

# FIRE COMPLIANCE

Fire is a hot topic and must be approached with caution, using the correct information. Soprema has an outstanding level of ‘tested build ups’ across the whole product range, however, it is imperative that these are used in the correct applications.

This guide seeks to clarify some of the common terms, tests and regulations that are frequently referred to.




## 1. BUILDING REGULATIONS

Building regulations set standards for the design and construction of buildings to ensure the safety and health for people in or about those buildings. They also include requirements to ensure that fuel and power is conserved and facilities are provided for people, including those with disabilities, to access and move around inside buildings.

The Building Regulations are a legislation made under The Building Act 1984. The Building Act 1984 empowers and obliges local authorities to enforce the building regulations in their areas. These powers include a right of entry into buildings and powers of prosecution and enforcement in relation to non-compliant building work, dangerous structures and demolitions.

## 2. APPROVED DOCUMENTS

Approved Documents a series of government documents that provide general guidance about how specific aspects of building design and construction can comply with the Building Regulations.

| | |
|---|---|
| Part A : Structure | Part K : Protection from falling, collsion and impact |
| Part B : Fire Safety | Part L : Conservation of fuel and power |
| Part C : Site preparation and resistance to contaminants and moisture | Part M : Access to and use fo buildings |
| Part D : Toxic substances | Part N: Glazing - Safety in relation to impact, opening and cleaning |
| Part E : Resistance to the passage of sound | Part O: Overheating |
| Part F: Ventilation | Part P: Electrical safety |
| Part G: Sanitation, hot water safety and water efficiency | Part Q: Security – Dwellings, |
| Part H: Drainage and waste disposal | Part R: Physical infrastructure for high-speed electronic communication networks |
| Part J: Heat producing appliances and Fuel storage system | |

## 3. APPROVED DOCUMENT B: FIRE SAFETY

Approved Document B covers fire safety matters within and around buildings and was heavily amended in 2018 following the Grenfell Tower fires. These amendments consisted of a ban on the use of combustible materials in external walls on Relevant Buildings.
Approved document B consists of two parts, Volume 1 – Dwellings and Volume 2 – Buildings other than dwellings.
Approved document B is split into requirements, Requirement B3 (Internal Fire Spread) and Requirement B4 (External Fire Spread) are the most relevant to this guide.

## 4. RELEVANT BUILDING

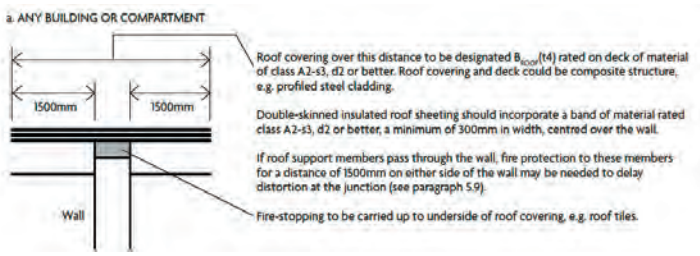
A "relevant building" means a building with a storey (not including roof-top plant areas or any storey consisting exclusively of plant rooms) at least 18 metres above ground level and which contains:

- one or more dwellings;
- an institution;
- a room for residential purposes (excluding any room in a hostel, hotel or boarding house);

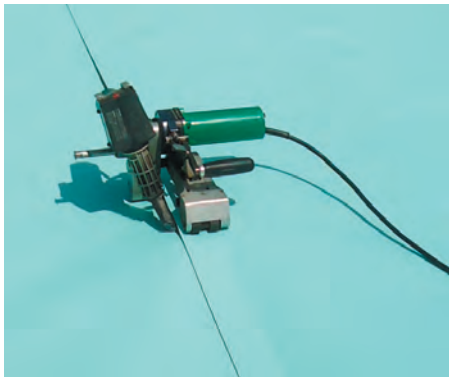
## 5. REQUIREMENT B3: INTERNAL FIRE SPREAD (STRUCTURE)

*Junction of compartment wall with roof: A compartment wall should achieve both of the following.*

1. Meet the underside of the roof covering or deck, with fire-stopping to maintain the continuity




For roofs over compartment walls, the roof covering system must achieve BROOF(t4). The deck in this area and 1500mm either side of the wall must be class A2-s3 d2 or better (limited combustibility eg, cement based, Magply) with a band of insulation rated class A2-s3, d2 or better, a minimum of 300mm in width, centered over the wall.
In dwellings, offices or assembly or recreation buildings under 15m high, a substrate of B-s3, d2 or worse can be used but must be bedded in a mortar or similar for the width of the wall.





## 6. REQUIREMENT B4: EXTERNAL FIRE SPREAD

- The external walls of the building shall adequately resist the spread of fire over the walls and from one building to another, having regard to the height, use and position of the building.
- The roof of the building shall adequately resist the spread of fire over the roof and from one building to another, having regard to the use and position of the building.

External Walls: Materials used in the external face of all external wall should meet the combustibility requirements set out in Table 10.1 of Requirement B4. The distance from the boundary, height and use of the building are all deciding factors of what materials can be used. In addition, the amount of unprotected areas (areas without the classification of materials listed below) are limited. We should always recommend the designer seeks prior approval from their Building Control provider prior to commencement on site.

Roofs: Requirement B4 also sets out the required designation of roof coverings. Required classification is also dependent on the distance from the boundary and listed in table 12.1.

| Building type | Building Height | Less than 1000mm from boundary | 1000mm or more from boundary |
|---|---|---|---|
| 'Relevant buildings' | | Class A2-s1, d0 or better | Class A2-s1, d0 or better |
| Assembly and recreation | More than 18m | Class B-s3, d2 or better | From ground level to 18m: class C s3, d2 or better<br>From 18m in height and above: class B-s3, d2 or better |
| | 18m or less | Class B-s3, d) or better | Up to 10m above ground level: class C-s3, d2 or better<br>Up to 10m above a roof or any part of the building to which the public have access: class C-s3, d2 or better<br>From 10m in height and above: no minimum performance |
| Any other building | More than 18m | Class B-s3, d2 or better | From ground level to 18m: class C s3, d2 or better<br>From 18m in height and above: class B-s3, d2 or better |
| | 18m or less | Class B-s3, d2(2) or better | No provisions |

| Classification of covering of roof | Distance from any point on relevant boundary | | | |
|---|---|---|---|---|
| | Less than 6m | At least 6m | At least 12m | At least 20m |
| $B_{ROOF}$(t4) | yes | yes | yes | yes |
| $C_{ROOF}$ (t4) | no | yes | yes | yes |
| $D_{ROOF}$ (t4) | no | yes | yes | yes |
| $E_{ROOF}$ (t4) | no | yes | yes | yes |
| $F_{ROOF}$ (t4) | no | no | no | yes |

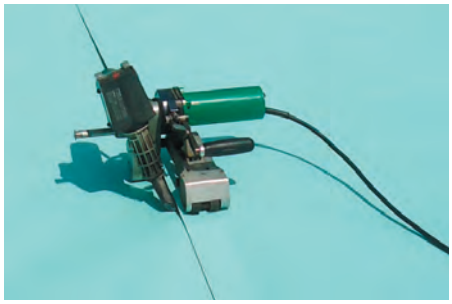
The classification of $B_{ROOF}$(t4) allows for the unrestricted use of the roofing system on any building, regardless of distance to a boundary. Other classifications can be used on buildings that fall further away from the boundary.

**Inverted Roofs**: Inverted roofing applications can be exempt from the need for fire testing providing a specified depth of covering is installed over the top of the waterproofing.
Annex of Commission Decision 2000/553/EC lists the following inorganic coverings as suitable exemptions:

- Loose laid gravel with a thickness of at least 50 mm or a mass ≥ 80 kg·m-2 (minimum aggregate size 4 mm, maximum 32 mm)
- Sand/cement screed to a thickness of at least 30 mm
- Cast stone or mineral slabs of at least 40 mm thickness

In addition, many BBA Certificates state that green roof coverings, as listed below, can be considered exempt.

- a roof garden covered with a drainage layer of gravel 100 mm thick and a soil layer 300 mm thick.
- irrigated roof gardens, green roofs, brown and biodiverse roofs.



## 7. FIRE TESTING & CLASSIFICATION



DD ENV 1187:2002 - Test methods for external fire exposure to roofs
DD-ENV 1187 details 4 test types for roofing systems. The test method used is identified by the suffix of the classification. Eg BROOF(t1) indicates the system was tested to test 1. Tests 1-3 are widely used across Europe with only the UK using test 4.

*Test 1 – with burning brands*
*Test 2 – with burning brands and wind*
*Test 3 – with burning brands, wind and supplementary radiant heat*
*Test 4 – with two stages incorporating burning brands, wind and supplementary radiant heat*

**BS EN 13501-5 - Fire classification of construction products and building elements. Classification using data from external fire exposure to roof tests**
**BS EN 13501-5** details the required performance the test sample should achieve to gain its classification.

| | |
|---|---|
| $B_{ROOF}$(t4) | • No penetration of roof system within 60 minutes<br>• In preliminary test, after withdrawal of the test flame, specimens burn for less than 5 minutes<br>• In preliminary test, flame spread less than 0.38 m across region of burning |
| $C_{ROOF}$(t4) | • No penetration of roof system within 30 minutes<br>• In preliminary test, after withdrawal of the test flame, specimens burn for less than 5 minutes<br>• In preliminary test, flame spread less than 0.38 m across region of burning |
| $D_{ROOF}$(t4) | • Roof system is penetrated within 30 minutes but is not penetrated in the preliminary test<br>• In preliminary test, after withdrawal of the test flame, specimens burn for less than 5 minutes<br>• In preliminary test, flame spread less than 0.38 m across region of burning |
| $E_{ROOF}$(t4) | • Roof system is penetrated within 30 minutes but is not penetrated in the preliminary test<br>• Flame spread is not controlled |
| $F_{ROOF}$(t4) | • No performance determined |

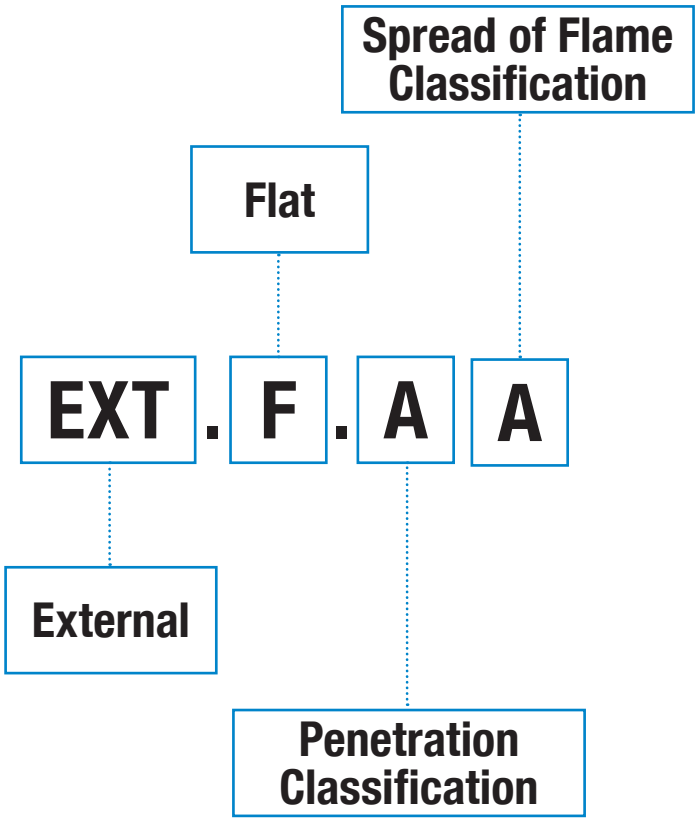


**DD-ENV 1187:2002 & BS EN 13501-5** replaces the old test and classification system **BS 476:3**. Within BS 476:3 system fire classifi ations where expressed in two parts, penetration and spread of flame

**First Letter - Fire Penetration classification**
A : Those specimens which have not been penetrated within 1 hour.
B : Those specimens which are penetrated in not less than 30 minutes
C : Those specimens which are penetrated in less than 30 minutes
D : Those specimens which are penetrated in the preliminary flame tes

**Second Letter - Spread of Flame classification**
A : Those specimens on which there is no spread of flam
B : Those specimens on which there is not more than 533mm, (21 inches), spread of flam
C : Those specimens on which there is more than 533mm, (21 inches), spread of flam
D : Those specimens which continue to burn for 5 minutes after the removal of the test flame or with spread of flame more than 381mm, (15 inches), in the preliminary test.

**A rating of BROOF(t4) is equivalent to the old classifications of EXT.F.AA / AB / AC**





**Euroclass Ratings - EN 13501-1: Fire classification of construction products and building elements**

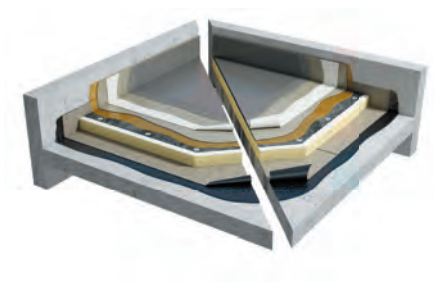
This classification shows the properties of a product based on 3 criteria.
There are 7 reaction to fire classifications levels available:
The reaction to fire classification determines how much (if any) a material contributes to the spread of flame:

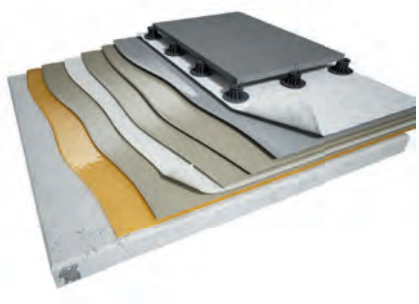
**A1, A2** = Non Combustible Materials.
**B, C, D** = Ranges from very limited to medium contribution to fire.
**E, F** = High contribution to fire.

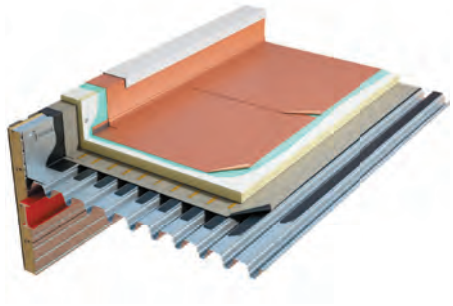
The 's' part relates to total smoke propagation, during the first ten minutes of exposure.
These determine a 'smoke' index:
**S1** = a little or no smoke
**S2** = quite a lot of smoke
**S3** = substantial smoke

The 'd' part relates to 'flaming droplets and particles' during the first 10 minutes of exposure.
The index is:
**D0** = none
**D1** = some
**D2** = quite a lot

| Classification | Definition | Description |
|---|---|---|
| A1 | Non-combustible | No contribution to fire |
| A2 | Limited combustibility | Very limited contribution to fire |
| B | Combustible | Limited contribution to fire |
| C | | Minor contribution to fire |
| D | | Medium contribution to fire |
| E | | High contribution to fire |
| F | | Easily flammable |







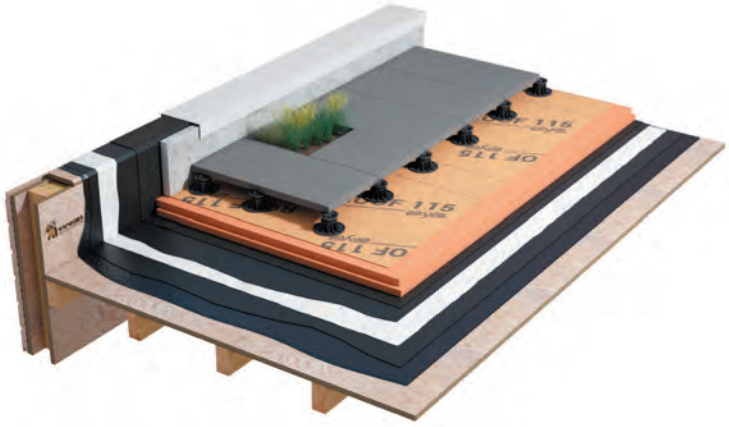


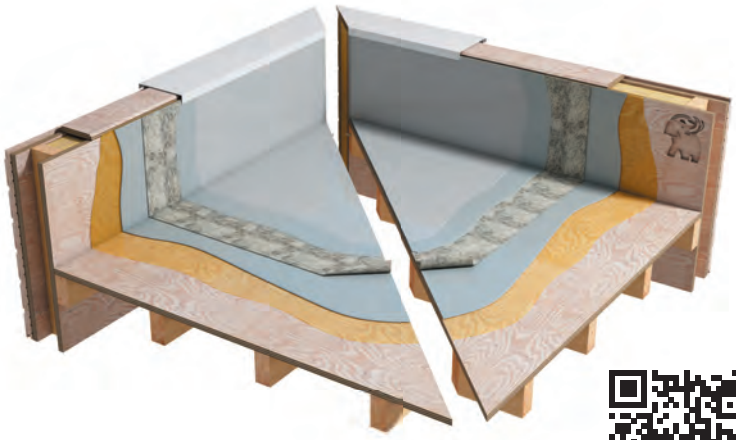
## 8. TERMINATION OF ROOFING MATERIALS ON RELEVANT BUILDINGS

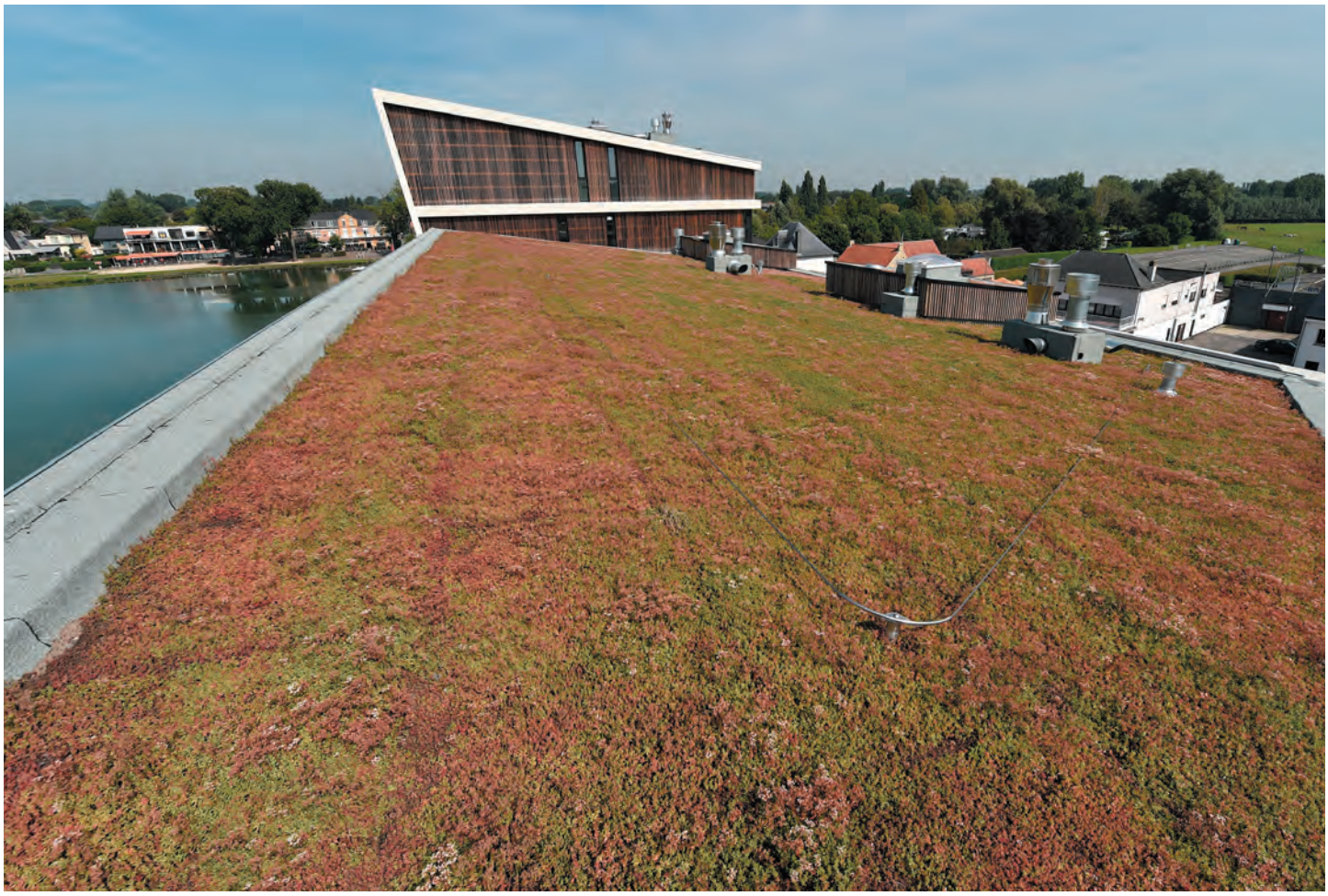
The ban on the use of combustible materials in **Relevant Buildings** has given rise to alternate waterproofing termination details to be used. NFRC, LRWA and SPRA have combined to produce a guidance document highlight the changes.

(GUIDANCE DOCUMENT Changes in Regulations and Approved Documents Relating to Fire Safety For Flat Roofs on 'Relevant Buildings' in England)

'Membranes' are exempt from the combustibility requirement and the vertical plane up to 150mm above the roof finish/walking surface it can be insulated with a combustible insulation provided that it is no thicker than 60mm and it does not span across a compartment wall line. For terminations at heights above 150mm, the insulation is recommended to be non-combustible. A height limit of 1,100mm for parapets or lift overruns should also be applied.







## 9. SPECIFIED ATTACHMENT ON RELEVANT BUILDINGS

The definitions of balconies and terraces can be found within GUIDANCE DOCUMENT Changes in Regulations and Approved Documents Relating to Fire Safety For Flat Roofs on 'Relevant Buildings' in England


**Key**

1. Projecting open balcony
2. Projecting enclosed balcony
3. Recessed open balcony
4. Recessed enclosed balcony
5. Terrace
6. Recessed open terrace
7. Recessed enclosed terrace
8. Juliet guarding
9. Access balcony (can be referred to as 'access deck' or 'walkway'
10. Access terrace (can be referred to as 'access deck' or 'walkway'
11. Free-standding balcony

Terrace, access terrace and access balcony surfaces with fire performance Broof (t4) or better.

Imperforate (as BS 9991) guarding materials reaction to fire class.

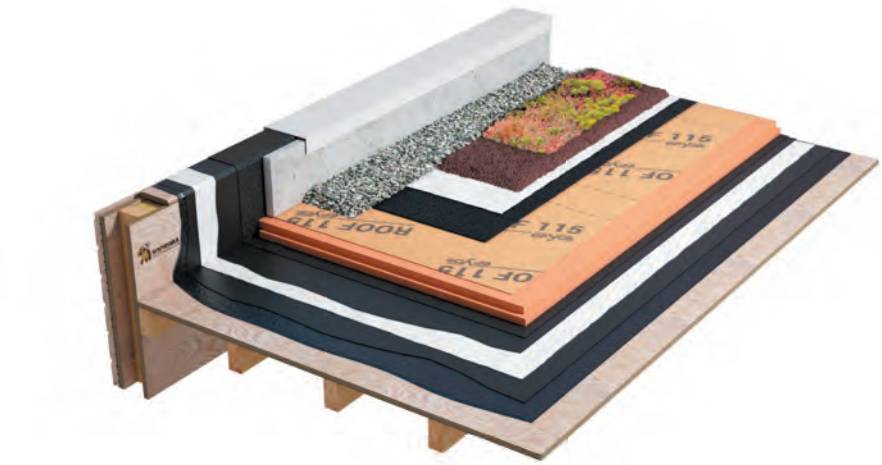
Other guarding materials reaction to fire class

Other guarding

Waterproofing membranes can be used in ALL applications, however, on balconies or terraces classified as a Specified Attachment on a Relevant Building it is not permissible to terminate a combustible membrane on the wall.

## 10. RESPONSIBILITY FOR COMPLIANCE

As stated within the Building Regulations, people who are responsible for building work (e.g. agent, designer, builder or installer) must ensure that the work complies with all applicable requirements of the Building Regulations. The building owner may also be responsible for ensuring that work complies with the Building Regulations. If building work does not comply with the Building Regulations, the building owner may be served with an enforcement notice.



**Tested Build Ups**

Soprema have a huge selection of tested build ups that meet BROOF(t4). Caution should always be exercised when specifying a system that has not been shown to meet the BROOF(t4) standard. Details of tested buildups can be found on the relevant product BBA Certificate or by contacting Soprema Technical Department.

**SOPREMA SOLUTIONS**

Do you have a question about one of our products and/or their application?

All information can be found at
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