

## SPRA TECHNICAL GUIDANCE S20/24

# JUNCTIONS OF COMPARTMENT WALLS WITH FLAT ROOFS

### INTRODUCTION

The spread of fire within a building can be restricted by sub-dividing it into compartments separated from one another by walls and/or floors of fire-resisting construction. The objective is twofold: to prevent rapid fire spread, which could trap occupants of the building; and to reduce the chance of fires becoming large, on the basis that large fires are more dangerous – not only to occupants and fire and rescue service personnel, but also to people in the vicinity of the building. With regards to national Building Regulations, compartmentation is complementary to provisions made for the protection of escape routes, and to provisions made against the spread of fire between buildings.

### DEFINITIONS

- **Compartment (fire)** A building or part of a building, comprising one or more rooms, spaces or storeys, that is constructed to prevent the spread of fire to or from another part of the same building or an adjoining building.
- **Compartment wall or floor** A fire resisting wall or floor to separate one fire compartment from another.
- **Fire-stop/Fire-stopping** A seal provided to close an imperfection of fit or design tolerance between elements or components, to restrict the spread of fire and smoke.

### APPROVED DOCUMENTS

The Approved Documents set out what, in ordinary circumstances, may be accepted as one way to comply with the Building Regulations 2010 (as amended – for England). Most building work (as defined by Regulation 3) being carried out in England must comply with the Building Regulations 2010. Approved Document B (AD B) relates to fire safety and is published in two volumes. Volume 1 deals solely with dwellings, including blocks of flats, while Volume 2 deals with all other types of building covered by the Building Regulations.

Note that the devolved nations of the United Kingdom (Northern Ireland, Scotland and Wales) can have different requirements. Refer to Technical Handbook E (Northern Ireland), Building Standards Technical Handbooks Section 2 (Scotland) and Approved Document B (Wales) for further guidance.

### REQUIREMENT B3

Requirement B3 gives practical guidance about the junction of a compartment wall with a roof. 'A compartment wall [that does not extend through a roof] should meet the underside of the roof covering or deck, with fire-stopping to maintain the continuity of fire resistance,' and, 'be continued across any eaves.'

*'To reduce the risk of fire spreading over the roof from one compartment to another, a 1,500mm wide zone of the roof, either side of the wall, should have a covering classified as B<sub>ROOF</sub> (t4) on a substrate or deck of a material rated class A2-s3, d2 or better. Roof covering and deck could be composite structure, e.g. profiled steel cladding.'*

*'Materials achieving class B-s3, d2 or worse used as a substrate to the roof covering... may extend over the compartment wall in buildings that are... a maximum of 15m high,' and, 'in one of the following purpose groups: [Residential (dwellings)] (purpose group 1); [Residential (other)] (purpose group 2(b)); Office (purpose group 3); [and] Assembly and Recreation (purpose group 5). Thermoplastic insulation materials should not be carried over the wall.'*

### INTERPRETATION OF REQUIREMENT B3

- **[Roof] covering** refers to a complete flat roofing system and not just the waterproof covering, as it is required to have a B<sub>ROOF</sub> (t4) classification. Such a classification could not apply solely to the waterproof covering;
- Where they apply to flat roofing, both **deck** and **substrate** refer only to a structural flat roof deck and no other component of a flat roofing system, such as thermal insulation (in AD B, the word *substrate* was intended to refer to roofs without a deck, such as pitched roofs);
- A roof covering classified as B<sub>ROOF</sub> (t4) on a structural flat roof deck of a material rated class A2-s3, d2 or better may extend over any compartment wall on any building regardless of height and purpose group. Insulation materials may be thermoplastic (expanded polystyrene (EPS) or extruded polystyrene (XPS)) or thermoset plastic (polyisocyanurate (PIR));
- A roof covering classified as C<sub>ROOF</sub> (t4) or worse may not be installed in the 1,500mm wide zone of a roof either side of a compartment wall;

- Materials achieving class B-s3, d2 or worse used as a structural flat roof deck may not be installed in the 1,500mm wide zone of a roof either side of a compartment wall in buildings that are taller than 15m; or extend over any compartment wall in Residential (institutional), Shop and Commercial, Industrial, or Storage and Other Non-Residential buildings regardless of height;
- Where a material achieving class B-s3, d2 or worse is used as a structural flat roof deck, EPS and XPS insulation materials should not be carried over a compartment wall.

Except for a structural flat roof deck, Requirement B3 makes no provision for the minimum Reaction to Fire classification of any other flat roofing system component that extends over a compartment wall.

### CHALLENGES AND PRACTICAL GUIDANCE

#### Building Control Interpretation of Requirement B3

The Regulator acknowledges that Requirement B3 and its associated diagrams (see overleaf) are unclear. The local building control body and its officers, therefore, may interpret Requirement B3 differently to the interpretation above. For example, they may interpret [roof] covering as relating to the waterproof covering only and insist that any thermal insulation that extends over a compartment wall is of a material rated class A2-s3, d2 or better.

It is important to note that when installing a tapered insulation scheme – PIR, for example – it is costly and very difficult to install insulation rated class A2-s3, d2 or better – mineral wool, for example – only in the areas above the widths of compartment walls. In such situations, often it is cheaper and easier to install a class A2-s3, d2 (or better) rated tapered insulation scheme across the whole roof area.

Interpretation of Requirement B3 within and between different building control bodies is becoming increasingly varied. While the Single Ply Roofing Association (SPRA) may disagree with any interpretation that contradicted that listed above, ultimately, the local building control body has the final say. It is advisable, therefore, to clarify their requirements prior to works starting on site to avoid any demand for remedial works at a later date. ►►

**CHALLENGES AND PRACTICAL GUIDANCE**

**New Build**

In a new build, typically it is the responsibility of the internal fit-out designer and contractor to ensure that any compartment wall meets the underside of the structural flat roof deck and suitable fire-stopping is installed. Nonetheless, the manufacturer, supplier and installer of the flat roofing system are advised to qualify this prior to works starting on site to avoid any contractual dispute.

Where the structural flat roof deck material to be installed above a compartment wall is to differ from that installed across the rest of the roof, the location of the compartment wall should be confirmed by the client, principal designer, designer and/or principal contractor prior to works starting to ensure the accuracy of installation. Ideally, this should be in the form of a plan drawing issued for construction.

**Flat Roof Refurbishment**

In a flat roof refurbishment, typically the manufacturer, supplier and installer of the flat roofing system are not responsible for internal works. Again, it is advisable to qualify this prior to works starting on site to avoid any contractual dispute. It is prudent, however, to make the client aware of their obligations—

- Do existing compartment walls meet the underside of the structural flat roof deck?
- Is the existing fire-stopping – if any – sufficient?

If access to the underside of the existing structural flat roof deck were restricted, an invasive survey by a competent person would be required. A refurbishment and demolition survey for asbestos containing materials may be required, too.

► **Diagram 8.2 Junction of compartment wall with roof**  
Page 71, Approved Document B, Volume 2, 2019 edition incorporating 2020 and 2022 amendments (for use in England)

