

BS 8214: 2016 Timber-based fire door assemblies – Code of Practice

Guidance and recommendations for the specification, installation and maintenance of timber-based fire doors (up to 2 hours fire resistance), covering fire door assemblies and door leaves.

Main content includes fire resistance classification; door specification, identification, marking and installation; joint sealing; glazing; handling and storage; hardware; smoke and fire seals; decoration and maintenance. ASDMA regards particularly important guidance as follows.

Sealing between the frame and the surrounding structure (Section 9.4)

Sealing of the joint between the door frame and the surrounding structure is important for three main reasons: for fire resistance, to minimise the risk of fire penetration into the structure; for smoke control, to limit the chances of smoke spread; and for acoustic reasons, to reduce the likelihood of flanking sound transmissions (see ASDMA acoustic guidance.)

A number of robust detail solutions for the sealing of the joint between the frame and the structure are summarised in Tables 2 to 5, for 30 and 60 minutes fire resistance. Those should be applied in conjunction with guidance given in section 9.4.2. Solutions are based to a major degree on mineral fibre, with capping where appropriate. There are restrictions on the sealant that can be used, and recommendations on mastics and expanding foam should be particularly observed.

- a) Mastic and expanded foam materials are approved for use as a linear gap seals where they are successfully tested according to BS 476-20 or BS EN 1366-4, for at least 30 minutes fire resistance.
- b) Expanding foam is allowed for gaps up to 20 mm wide provided it has been tested in joint gaps up to 20 mm, uncapped (i.e. no architrave) with a maximum fill depth of 100 mm.
- c) Expanded foam is NOT recommended for 60 minutes fire resistance sealing solutions.
- d) For both mastic and foam seals any substrate materials tested either side of the joint seal are considered acceptable, according to BS 476-20 or BS EN 1366-4 evidence (e.g. timber to concrete, concrete to concrete, flexible partition to timber, flexible partition to concrete) provided the seal is used within the tested parameters.
- e) Table 2 provides for the use of a pressure-forming intumescent joint seal (option 3, for maximum 5mm gap) provided it has been successfully tested for fire resistance to BS 476-22 or BS EN 1634-1.
- f) Use of mastic and foam sealants outside the parameters provided in the standard requires the maximum width and depth of expanded foam to be established by test evidence to linear joint tests BS 476-20 or BS EN 1366-4. Restrictions can apply on substrate materials, which must be observed. Manufacturer details, as determined by test, must always be followed.

Note: BS 8214 also provides an alternative route for the approved use of expanding foam and mastic sealants based on full door assembly fire resistance tests to BS 476-22 or BS EN 1634-1.

**ASDMA preference best practice guidance is that the sealing arrangement for the frame to structure joint should always be based on successful performance in a full fire door assembly fire resistance test.*

The marking of glass (Section 10)

Fire-resistant glass looks like any other glass. And since all standard glass products are inherently vulnerable to fire it is very important to visually distinguish fire-resistant glass types so that they can readily be identified as a *bone fide* fire-resistant glass, and traced to the manufacturer.

Key guidance is for fire-resisting glass to be *“permanently marked as a minimum with the glass name, glass supplier’s name and the applicable glass performance classification. Marking should be permanent and clear, able to be read after installation. Glass should not be marked on site at the installation, or later.”*

The marking must be permanent and clear. There are cases of printed marking on glass rubbing off during use (for example, from cleaning), which is entirely unacceptable. The marking of impact safety classification is also important in addition to the requirements of marking for fire resistance. Door manufacturers are advised to include a reminder to glass suppliers when placing orders, as a standing requirement – according to the above guidance from BS 8214.

Section 10 recommends that glazing should be carried out in the door factory exactly as specified because of the need for close supervision and attention to ensure compliance with test evidence. The glazing system is also important together with the specified fire-resistant glass. (i.e. the sealant; fixings; bead shape, material, dimensions; and any additional linings in the glazing pocket).

Fire safety risk assessors should NOT assume that glass is appropriately fire-resistant if the glass cannot be conclusively identified, or if the glass name and marking does not satisfactorily coincide with marking used by fire-resistant glass manufacturers. If that is the case then the glass should be replaced, using a glass and glazing system with applicable fire resistance test evidence.

Cutting apertures (Section 7.5 general guidance; Section 10, glazing; Section 11, hardware))

“Apertures should only be cut into doors that are designed to receive apertures, and should therefore only be fitted into a fire door under the control of the door manufacturer.”

“Cutting into the body of door leaves that are not designed to take apertures can critically weaken the door and undermine designed fire performance.”

“Apertures should not be cut on site unless this is carried out by a competent person in accordance with the test evidence and the manufacturer’s recommendations.”

The position and size of cut-outs should be the same as those approved by test and assessed evidence. Apertures not covered by applicable test evidence, or outside scope of certification, invalidate approval of the door assembly for use as a fire door. Modifications to existing doors *in situ* (for example, to comply with fire safety precautions under the Fire Safety Order) are not acceptable because of the risk of damaging the door structure, creating weaknesses for fire penetration.

Threshold smoke seals (Section 12.3)

The threshold gap is known to be an important consideration (arguably the most important factor) determining smoke leakage under ambient conditions. Smoke inhalation is known to be a major killer and an important consideration for safe escape.

BS 8214 notes that: *“The threshold gap in practice when the door is fitted can be significantly influenced by the type of floor/floor finish, and the degree of flatness of the floor across the opening arc of the door. Neither of these is determined by the door manufacturer, and if a particular gap is required then it is expected that this will be identified in the original door specification.”*

Also: *“When installed, the threshold gap should, where practicable, be sealed by a flexible edge or automatic drop seal either with a leakage rate not exceeding 3 m³/hr per metre at 25Pa when tested to BS 476-31.1 or BS EN 1634-3, or just contacting the floor, giving even contact with the floor but not exhibiting significant increased frictional forces that could interfere with the closing action of the door. Where this is impracticable the threshold gap should not exceed 3mm at any point.”*

It is important for specifiers to note that the type of floor covering and floor finish will not usually be under the control of the door manufacturer, and the manufacturer may not be told what the floor condition may be on installation.

Maintenance and Replacements (Section 13)

It is important for inspection and maintenance of fire doors to be undertaken on a regular basis, with immediate repairs where necessary. Replacement components should be according to the original specification. In particular, if a seal is damaged or missing in part then the entire length or section should be replaced - to the same formulation, dimensions, and configuration as the original, or equivalent as approved by the door manufacturer or a supplier of fire-resistant door seals. Replacement of the glazing, or the glazing system, should be according to the original glazing specification. And the glazing pocket must be cleaned of any debris before re-glazing.

Note: Scope and door definitions

The scope of BS 8214 does not include doorsets as defined under EN standards for CE marking according to the requirements of the Construction Products Regulation (CPR) for the European Single Market. A doorset for CE marking purposes has to be, by EN definition, supplied for installation from a single source as the complete door in its entirety, including all components and the door frame. That, however, is not typical practice customarily followed for the supply of timber doors in the UK. Traditional UK trade practice is to habitually use the term “doorset” in effect synonymously and generically with the term “door assembly,” equivalent, without significant distinction.

ASDMA policy is for fire door assemblies and components to be backed by rigorous third party certification, and for assembly and installation to be carried out according to that certification.