

Mind the gap



Fire Door Seals

Fire doors play a crucial role in restricting the spread of fire and smoke. If a door is to work effectively in its normal role the door leaf must be free to move within the frame, and in order to achieve this there must be a gap around the perimeter. If the gap is too wide, it may compromise the door's ability to restrict the spread of fire and smoke.

Intumescent materials and smoke seals play a major role in restricting fire and smoke spread, and hence reducing incidences of death and injury and reducing property damage.

When do you use fire seals?

The Building Regulations indicate where you need fire doors and that these would need intumescent seals. But they also indicate those situations where a fire door may also have to prevent smoke leakage, and in those situations a smoke seal must be fitted. You can buy intumescent seals that combine a smoke seal or you can fit two separate seals - a fire seal and a separate smoke seal. Fire doors are designated by their required period of fire resistance, FD30, FD60, FD90 and FD120. Different door configurations could need different sealing solutions. Single leaf and double leaf doors behave very differently: you should never assume that a sealing system for single leaf door will give the same performance on double leaf doors.



The Door Gap

The gap between the door leaf and the frame must be suitable for the intumescent seal fitted. In general, the gap should not exceed 3 mm. To facilitate the checking of this gap on site, the BWF-CERTIFIRE Fire Door and Doorset Scheme has produced a gap tester which can be used for this purpose.

The bwfgaptester is available free of charge from the BWF.

Intumescent Fire Seals and Glazing Systems

Intumescent fire resistant seals are also used as part of a glazing system which secures and seals the glass in fire door vision panels.

FIRE DOOR SEALS

Including:

- Fire door seals
- Intumescent fire seals
- Smoke only seals
- Specifying seals
- CERTIFIRE

Intumescent Fire Seals

Fire seals contain intumescent material. This material expands when exposed to heat. When a fire door is exposed to a fire, these seals heat up and expand to many times their original size, sealing the gap between the door and the door frame to stop the fire spreading. Intumescent fire seals are normally fitted into a groove on the door frame, although they can be fitted into the edge of the door leaf and are unobtrusive in the day-to-day use of the door.

Properly specified and installed, these seals will lie dormant for years, only activating when subjected to the high temperature and pressure conditions of a fire. Seals can be made from different types of materials, and hence will activate at different temperatures. It is important, therefore, not to mix one type of seal with another.



Smoke only seals

Spreading smoke is a major cause of death and injury in fires, as well as a large contributor to the cost of fire damage, therefore the containment of smoke is vital. Many of the fire resisting door assemblies used in buildings are also required to provide a smoke control function.

Fire doors, which also require smoke protection, are designated FD30S, FD60S, FD90S and FD120S.

Smoke seals control the leakage of air and smoke through vulnerable parts of the door, around the perimeter and when required at the threshold. Unlike intumescent seals, a smoke seal will be in contact with the door leaf each time it opens and closes.

Types of Smoke Seals: There are two main types of edge seals capable of providing the specified smoke leakage rates;

1. Deflection or Compression seals, normally fitted to the doorstep to produce contact with the face of the door.
2. Wiping seals or brush seals fitted in the leaf edge or in the frame opposite the edge, or at the threshold at the bottom of the door.



Compression seal



Wiping seal

Combined Fire and Smoke Seals

Combined seals incorporate intumescent material with a smoke seal and allow for one product to be fitted to perform both fire and smoke protection functions.



Specifying seals

When specifying any component for a fire door, including fire seals, it is imperative to follow the manufacturer's instructions and specifications for the particular door design. For a single leaf, single acting FD30 door, it may be possible to interchange intumescent seals with a CERTIFIRE approved seal, but you must replace the whole seal, and not have mixed types on the same door. However for FD60 and above, the installer must comply with the door manufacturer's tested and recommended solution. If seals are required for fire and smoke doors then the seals must not only be CERTIFIRE approved for fire but additionally for smoke.

If fire and smoke seals are not factory fitted, it is essential to consult the fire door manufacturer to determine exactly which seal specification has been tested for the particular door assembly.

During the development of the BWF-CERTIFIRE Fire Door and Doorset Scheme the BWF Manufacturers decided that, to ensure the integrity of the fire door assembly, all scheme fire door assemblies should be fitted with intumescent seals.

The companies in the BWF-CERTIFIRE Fire Door and Doorset Scheme, including the suppliers of seals, have all tested their products in a United Kingdom Accreditation Service (UKAS) accredited facility and have demonstrated that they meet the requirements of the Building Regulations.

These companies also voluntarily undergo independent audits to verify the continuing quality and fitness for purpose of their products. The Manufacturer's Installation instructions can be found on the fire door or on individual company websites. The BWF-CERTIFIRE Fire Door and Doorset Scheme directory lists all the scheme's current members and can be obtained via the BWF or the BWF website.

CERTIFIRE*

Seals that carry the relevant CERTIFIRE approval must be fitted to doors, frames or doorsets supplied by door manufacturer members of the BWF-CERTIFIRE Fire Door and Doorset Scheme.

* CERTIFIRE is the independent third-party certification body which carries out type and audit testing of all products within the BWF-CERTIFIRE Fire Door and Doorset Scheme for fire performance, together with factory production control. This ensures that the products supplied and installed provide the same level of performance as those tested.

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