

Ironmongery Requirements of a Typical Fire Resisting Door

A guide to critical fire door
ironmongery

An introduction to fire doors

Buildings are compartmentalised to delay the spread of fire from one area to another. These compartments are usually linked by fire doors to allow the flow of traffic around the building. A well designed timber fire door will delay the spread of fire and smoke without causing too much hindrance to the movement of people and goods. Every fire door is therefore required to act as a barrier to the passage of smoke and fire to varying degrees, depending upon its location in a building and the fire hazards associated with that building.

Fire doors have two important functions:

- when closed they form a barrier to stop the spread of fire
- when opened they provide a means of escape.



Ironmongery requirements of a typical fire-resisting and smoke stopping door

The main categories of fire doors are FD30 and FD60, which offer 30 and 60 minutes fire protection. The letter S after the 30 or 60 (e.g. FD30S) indicates seals for smoke resistance are required.

To determine the FD rating of fire doors the manufacturers have their fire doors assessed by subjecting them to a test procedure as specified in BS 476-22:1987 or BS EN 1634-1:2014. Tests are made on complete fire door sets: i.e. the fire door and door frame with all the requisite hardware (e.g. locks, latches, hinges, etc.)





POOLE WAITE

FIRE DOOR AND SELECTIVE IRONMONGERY RANGE:

a complete range of fire door ironmongery suitable for both commercial and residential properties.

Designed, manufactured and tested with clear illustrations, it easily identifies the products intended use, specification and certification.

DOOR HINGES

To ensure compliance with their fire rated performance, fire doors need to be hung with the correct number, size and quality of hinges. Normally a minimum of 3 are needed, however the manufacturer's instructions should be closely followed.

All hinges installed will need to be fitted with the suitable **intumescent hinge pads** for full compliance, to prevent flames and toxic gases escaping around hinge rebates. BS EN 1935 is the appropriate standard, and they should have Certifire approval.



Concealed bearing hinge

INTUMESCENT HINGE PADS

These must be used where tested and specified to prevent flames and toxic gases escaping around hinge rebates and to provide a thermal barrier between metal hinge flap and timber frame.

Mono ammonium phosphate (*Interdens*)

- Activation temperature 180°C
- Expands up to 40x in thickness
- Non-compressible

Graphite

- Activation temperature variable 150°C – 190°C
- Expands up to 15/20x in thickness
- Compressible

Always check test data to establish which product the hinge manufacturer or door supplier has had their product tested with.



1mm & 2mm thickness mono-ammonium phosphate intumescent hinge pads (interdens)



0.8mm, 1mm & 2mm thickness graphite intumescent hinge pads

DOOR CLOSING DEVICES

All fire resisting doors, other than those to locked cupboards and service ducts, should be fitted with an appropriately controlled self-closing device that will effectively close the door from a suitable and tested angle. In certain circumstances, concealed jamb mounted door closers may be specified and in these cases should be capable of closing the door from a desired angle and against a latch bolt or smoke seals if fitted.

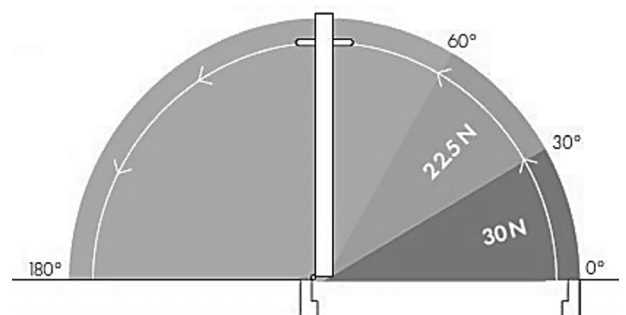


The strength and control of the closing device should be compatible with the size of the door and other factors, such as resistance from latch mechanisms, air pressure, heavy traffic use and abusive treatment. The installation of certain door closers with need the suitable intumescent kit when being fitted on fire doors.

They should be tested to BS EN 1154 or BS EN 1155, CE marked and Certifire approved where necessary.

EQUALITY ACT (2010) COMPLIANT DOOR CLOSERS

- Door closers must produce an opening force of below 30N between 0°-30° and below 22.5N between 30°-60°
- Similar to hinges, door closers tested on timber doors are not automatically suitable for steel doors.
- When used on fire doors, the minimum power setting for door closers is Size 3.
- Factors to consider: door location, ironmongery installed and air pressure.

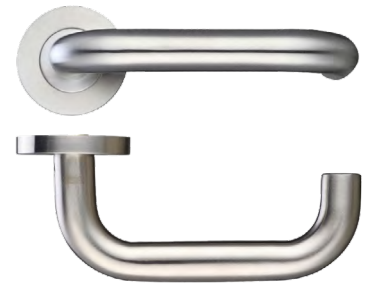


Opening resistance for door closers

DOOR HANDLES

These are a very important component in maintaining fire door integrity and something that is often neglected. For correct compliance they should conform to BS EN 1906 and BS EN 1634-1.

Products not tested to the required standards can invalidate any fire certification.



DOOR LOCKS AND LATCHES

Locks and latches must be compliant and tested to BS EN 12209 and Certifire approved when fitted to a fire door. It is imperative that the correct intumescent gasket kit is installed for full compliance.

Popular options are European DIN size lock cases or UK standard size.



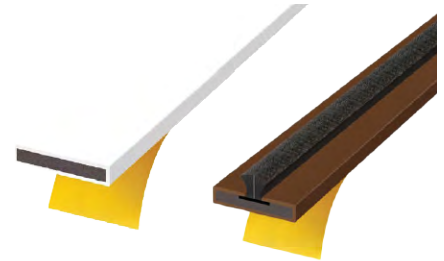
FIRE DOOR SIGNAGE

It is important to ensure the correct sign is fixed to the door. Appropriate door signage should comply with BS EN 1634-1.



INTUMESCENT FIRE AND SMOKE SEALS



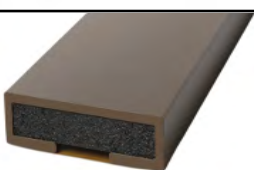
The gaps around the side of a door leaf are essential to allow the door to open and close. However, these door edges are the part of a door set most susceptible to penetration by heat and smoke. This is because the pressure of a developing fire drives hot gases between the door and frame, leading to loss of integrity.



Intumescent seals protect these gaps

- PVC strips are rebated into either the door edges or door frame, and are normally visible when opened. They must be applied to both vertical edges and the top, but are not required along the bottom edge.
- Where a door is also required to have a smoke seal, the best solution is to use a combined brush or rubber blade seal.
- Within the PVC sleeve is intumescent material that expands when subjected to heat around 200°C, to fill the gap between the door and the frame thus maintaining its integrity.
- This prevents flames and toxic gases escaping through a closed door, for 30 minutes, 60 minutes, etc. depending on the fire rating.

At no time should the strips be overpainted as this causes them to harden and lose their ability to perform. When fitting strips and seals they must not be altered in shape or size, as this will reduce their effectiveness. They should be tested to BS 476 part 22 and part 31.1 or EN 1634-1.

Intumescent product	Material	Activation temperature	Expands
	Graphite based	150-190°C	15-20x
	Sodium silicate	100°C	10x
	Mono ammonium phosphate	180°C	Up to 40x

AUTOMATIC DROP DOWN SEALS

Automatic door bottom seals are mechanically spring loaded seals that lift clear of the floor as the door opens and seal tight when the door is closed. Some automatic door bottom seals are surface mounted whilst other models are fully concealed. They operate over uneven floor surfaces and can be used with threshold plates that offer added protection against rain infiltration where doorways may be exposed to severe weather conditions.

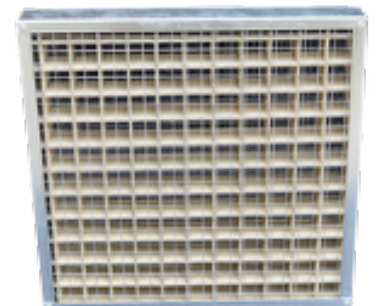
Most door bottom seals are easily adjusted after installation without removing the door. This ensures an optimum seal is achieved and maximum performance is maintained in the event of minor building movement.



AIR TRANSFER VENTS

If an air transfer vent is fitted to the door, the internal grille should comply with BS EN 1634-2 and BS 476 Part 22.

Suitable for internal, surface mounting in doors and walls. The steel construction ensures that the unit is satisfactory not only for Intumescent Fire Grilles but can also be used in standard air transfer applications, utilised with the wide flange border providing adequate clearance for fixing to the surrounding structure. Slimline and unobtrusive, the unit offers a free area around 70% for economical selection.



This guide is for reference only and should not be relied upon standards and certifications may change at any time.