Fire Doors – Basic Guidance & Checklist

Introduction

Fire doors and all passive fire protection products play a unique role in fire safety by containing a fire to a single compartment of a building and therefore reducing the risk to those in other compartments. Properly maintained fire doors should be part of the fire safety plan for every building.

When a fire door is installed, it should be done so with certificated components that will ensure it achieves its fire rating. Over time, without the correct maintenance, the fire door could fail so it is a statutory requirement that doors located on protected fire routes, doors to restrict the passage of smoke and final fire exit doors should all be regularly inspected to ensure that they function correctly and to the standard originally intended when the doors were installed.

The frequency of each inspection should be determined by assessing among other things the amount of use the door is subjected to, the criticality of the area and who it protects. This may result in a requirement for the doors to be inspected weekly or monthly but all fire doors must be inspected at least once a year.

Door leaf & frame

All fire doors should close effectively from any angle of opening using only the door closer and fit snugly in their frames. There must be free movement i.e. doors should freely swing through their normal arc without slowing or "grounding" on the floor.

There are a number of reasons why doors may fail to close:

- Check that there are no foreign bodies or other objects obstructing the door.
- Check for scuffmarks on the floor that could indicate the door is not moving freely.
- Check that any smoke seals are correctly fitted and are undamaged.
- Check the latch, if fitted to ensure correct operation and that it is suitably lubricated.
- Only as a last resort should the closing device be adjusted, but this must be carried out carefully to ensure that the doors can be opened without undue force.

Ensure all obstructions are removed and the circumstances associated with it reported to the appropriate line manager

The door and frame must remain square and should not be able to distort between the stiles, top and frame. The gaps must not be greater than those specified in the manufacturers' installation instructions.

This is also true for the meeting stiles of double doors. Contact the BWF for their handy bwf**gap**tester to help you check the gap and find the BWF label.

If the door leaves have minor surface damage, then these can be repaired. However, if there are any major defects in either the door leaves or the frame, they must be replaced.

Glazed apertures

If the glass is cracked or broken, then it must be replaced **immediately**. If not, then in the event of a fire, smoke and gases will travel through the glass, which means that the fire door will not last its fire rating. This work must only be undertaken by companies with appropriate third party certification or by accredited installers.

Intumescent fire and smoke seals

For a door to work effectively, the door leaf must be free to move within the frame. In order to do this there must be a gap around the perimeter which may compromise the door's ability to restrict the spread of fire.

Intumescent seals are the strips set into the door or frame that swell up rapidly when heated to fill the gap between the door and its frame or between door leaves in a double door.

The door may also have cold smoke seals. These are of a plastic fin or brush type and prevent smoke passing through any gaps in the early stages of a fire prior to the fire reaching the temperatures at which the intumescent strips operate.

Fire and hot gases can easily pass through gaps around the door within seconds and so to ensure the safety and reliability of the door, always fit intumescent seals.

Intumescent seals should be checked regularly to ensure they are in place and are not worn, damaged or missing.

Intumescent gaskets may have been used under ironmongery and other door hardware for example hinge blades, lock/latch end plates, strike plates and flush bolt recesses.

If seals have been badly fitted, are damaged or missing they must be replaced and in order to maintain the design performance potential any replacement seal should be of the same brand, size and type as the original.

If seals have to be replaced, then they should be fitted in one continuous length if possible. If fixed piecemeal, they could potentially leak at the joints.

It should be noted that loose smoke seals left flapping could damage a fire door beyond repair.

Door Closing Devices

Check that the door closing device is operating correctly. Open the door fully and check it closes without binding on the floor. Open the door to approximately 5 degrees and again check that it closes fully, overcoming any latch or seal.

Check the door closing speed is approximately 10 seconds from an opening angle of 90 degrees and ensure the door does not slam.

Adjust the speed as necessary.

Ensure that the doors are not being wedged open.

Electro-magnetic hold-open and swing-free devices

Hold-open devices on fire doors should be electro-magnetic, and connected directly to the fire detection and alarm system, so that they can be released automatically if there is a fire. If fitted, make sure that any electro-magnetic hold open device is operating correctly and releases immediately when power is removed.

Make sure that door hold open devices are not straining the door against its self closing device.

A closer fitted at the top of the door should have the hold open device fitted at the top of the door. A floor spring at the foot of the door should have the hold open device fitted at the bottom.

Other types of fire door securing

Locked doors situated on an evacuation route will be automatically unlocked in the event of an alarm.

If this does not work they can be unlocked by breaking the green ‘break glass’ unit beside the door

Ironmongery & Door Hardware

Mechanical items such as hinges, locks, latches, closer, floor springs etc are likely to wear over time.

Maintenance provisions should comply with the hardware suppliers' recommendations where these are known.

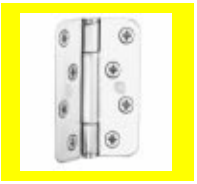
Locks and latches may require occasional light lubrication however some hinges use self-lubricating bearings that will not need additional lubrication.

Where it is necessary to replace worn hardware on a fire door these should be with products to the same specification as the original where possible.

Where it is necessary to replace worn hardware on a fire door such as hinges, latches, locks, flush bolts, closer and other items of load bearing or securing hardware these should be with products to the same specification as the original and be proven for use in timber fire rated doorsets.

It should be noted that hardware that has been successfully tested in metal door sets might not be suitable for use with timber door sets.

All ironmongery needs to be regularly checked. Ensure that all fixings are secure. Some hinges, closer arms and locks may require lubrication. Where required you must replace components like-for-like according to the original specification.



Hinges

Check that there is no visible wear on the hinge. Any dark marks or stains around the hinge knuckle could indicate wear and impending failure, meaning that the hinges should be replaced as soon as possible.

Locks and lever handles

Check that the levers fully return to the horizontal after use and that the latchbolt is engaging smoothly and completely into the strike. Wipe any metal dust deposits off the latchbolt and strikeplate. Adjust, lubricate or replace as required.

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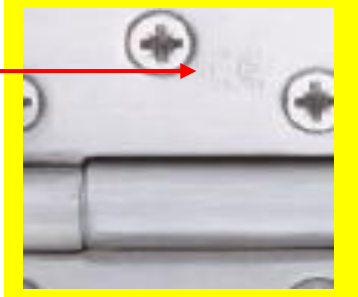
CE marking of ironmongery



CE Marking is required under the Construction Products Directive (CPD) to confirm that construction products, which are placed on the market within Europe, meet the Essential Requirements set out in the CPD:

- Mechanical Stability
- Fire Safety
- Health & Environmental Safety
- Sound Protection
- Energy Efficiency

CE Marking allows a simple route to satisfying the Construction Products Regulations, which apply the Directive and its requirements in the UK.

CE Marked hinges, tested to BS EN1935, should be used on fire or smoke doors and on all routes of escape.

CE Marking of door closing devices, electro-magnetic closing devices and door co-ordinators tested to BS EN 1154/55/58.

Door Marking

The woodworking association TRADA use a system called Q-Mark. Q-Mark fire doors are clearly marked as such by small coloured plastic plugs inserted in the jamb of the door leaf and/or the frame. These indicate the type of fire door and include other information such as member details and scope of certification that can be used for verification purposes during specification, installation or at a later stage in during the doors service life. They are only available to full members of the BM TRADA Q-Mark schemes. The plugs follow a simple colour coding system. The information is summarised on a laminated plastic card available from BM TRADA.

The British Woodworking Federation (BWF) is another organisation that provides fire door ratings and the following is their system. Fire ratings for fire door assemblies are given in minutes and prefixed by the letters 'FD' i.e. FD 30 equates to a 30 minute fire door or doorset. The most commonly specified integrity levels are:

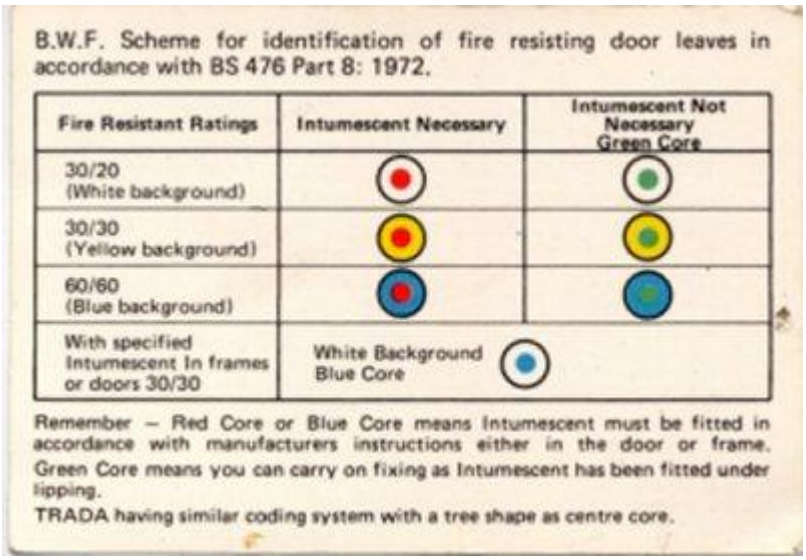
- FD30 - 30 minutes (Half Hour)
- FD60 - 60 minutes (One Hour)
- FD90 - 90 minutes (Ninety Minutes)
- FD120 - 120 minutes (Hundred and Twenty Minutes)

As part of the steps being taken by the BWF to simplify fire door identification and eliminate confusion in specification, the existing FD20 rating is no longer available.

Every BWF-Certifire Fire Door Assembly carries a permanent and tamper evident label and/or plastic plug. This is found either on top of the door, or just below the bottom hinge if it is a doorset.

Labels must never be tampered with in any way, including painting over them, as doing so will invalidate the certification. In this situation, contact the manufacturer directly and inform them so they can act accordingly.

The former system used by BWF and shown below is no longer used but they may be found on older installations.



B.W.F. Scheme for identification of fire resisting door leaves in accordance with BS 476 Part 8: 1972.

Fire Resistant Ratings	Intumescent Necessary	Intumescent Not Necessary Green Core
30/20 (White background)		
30/30 (Yellow background)		
60/60 (Blue background)		
With specified Intumescent In frames or doors 30/30	White Background Blue Core	

Remember – Red Core or Blue Core means Intumescent must be fitted in accordance with manufacturers instructions either in the door or frame. Green Core means you can carry on fixing as Intumescent has been fitted under lipping.
TRADA having similar coding system with a tree shape as centre core.

Cleaning

Fire doors are finished with a variety of facings, which require different methods of cleaning. The manufacturer's instructions will give full details.

Fire Door Signs

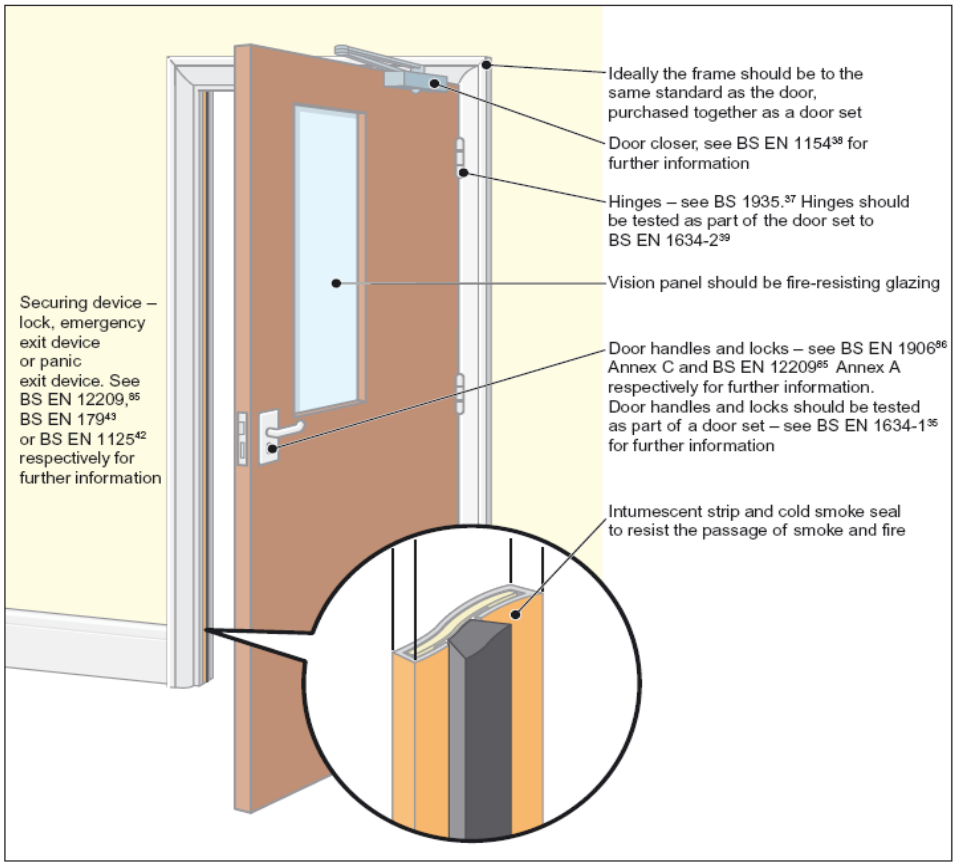
The Health and Safety (Safety Signs and Signals) Regulations 1996 and BS5499 lay down standards for the size and siting of Fire Door Safety Signs.

Signs should be fitted on all non-domestic fire doors and be visible at eye level. If these have been tampered with or removed, they must be replaced.

All fire doors **MUST** be signed using one of the following standard signs preferably in rigid plastic/metal screwed to the door.

Sign, Colour & Pictogram	Description, Uses and Conventions
	**Fire Door Keep Shut (or Closed):** • To be used on Fire Doors fitted with a self-closing device (e.g. floor springs / overhead / Perko type) • Signs should be positioned at eye level on both faces of each door leaf
	**Fire Door Keep Locked:** • To be used on Fire Doors without self-closing devices (e.g. cleaner's cupboards, stores, service ducts, electrical intake cupboards) • Sign fixed only to outer door face at eye level
	**Automatic Fire Door Keep Clear:** • To be used on Fire Doors connected to **'Electromagnetic Door Hold Open'** devices that release the doors on activation of the fire alarm system. • The purpose of the sign is to prevent the obstruction of the fire doors by objects that would prevent if from closing when released automatically. • Signs fixed on the visible side of the open leaf at eye level when the door is held open

Figure 61: A fire resisting and smoke stopping door



Do they still close?

Do they still fit?

Is it propped or wedged open?

Fire Door – Maintenance Checklist

	Yes	No
Plugs / Labels		
(1) Has the door got an identifying plug inserted in the edge or top of the door? (2) Has the door got a BWF-CERTIFIRE Fire Door Scheme label on the top edge or just below the bottom hinge if it is a doorset? (3) If not, can you confirm that the door is in fact a fire door and has been certificated as such?		
Door Leaf		
(1) Is either door leaf twisted, damaged, or has holes in it? (2) Does the door leaf sit against the doorstop and is it free from distortion? (3) If the door is veneered or lipped, is the glue still holding these products firmly in place? (4) Is the door free from damage including dents and holes? (5) Does the door close properly without binding evenly against its stops and where applicable does it latch properly? (6) Has the door dropped on its hinges? (7) Are the doors wedged or blocked open? **Note!** (i) On older fire door installations they will have only 25mm door stops fitted and no smoke seals in this instance and it is therefore critical that the door closes evenly and properly against the stops. (ii) It is an offence under both health and safety and fire safety legislation to interfere with safety equipment and items provided for health and safety and fire safety e.g. fire doors, fire extinguishers etc. Only an Approved Device complying with the relevant BS EN Standard may hold open a fire door		

Door Frame		
(1) Is the door frame fixed securely? (2) Is the frame split or damaged? (3) Are there gaps between the door edge and the frame? (4) Is the frame to door leaf gap consistently 3mm? (tolerance of +/– 1mm) (5) Is the door frame firmly attached to the wall? (6) Are there gaps between the frame and structure? (7) If a planted doorstop is present, is it firmly attached?		
Threshold Gap		
(1) Is there a consistent gap under the door that allows it to swing without touching the floor covering? (2) Is the door to floor covering gap consistently 10mm (3mm if smoke seals are fitted) or less when the door is closed? (3) If the door leaf is fitted with a threshold seal, does the seal make contact with the floor covering when the door is closed? **Note!** For an easy way to check for gaps and labels, e-mail BWF at firedoors@bwf.org.uk for a free Gap Tester.		
Intumescent/Smoke/Acoustic Seals		
(1) Does the door or frame have intumescent seals fitted? (2) Are the seals continuous around the frame or door leaf? (3) Are they in good condition, intact and undamaged and free from paint? (4) Are the seals well attached inside the groove in the frame or door leaf? (5) If there is a brush or fin type seal, is it free from damage or breakage? (6) Does the door or frame have cold smoke seals in the form of brushes or a rubber strip?		

(7) If smoke seals are fitted are they in good condition, intact and undamaged? (8) If smoke seals are fitted are they continuous around the frame or door leaf? (9) Do the smoke seals make contact with all the frame and door edges?		
Door Handles		
(1) Are the door handles functioning correctly? (2) Are they loose or missing? (3) If on an escape route can the door be opened without the use of a key? (4) If on an escape route can the door be opened in the direction of travel?		
Hinges		
(1) Does the door leaf have 3 or more hinges with all the screws fitted? (2) Are the screws the correct size and type? (3) Are any of the hinges loose, rusty or binding? (4) Are there any dark marks or stains around the hinge knuckle? (5) Are the hinges free from metal fragments and oil leakage? (6) Are the hinges free from non-combustible packing? **Note!** Make a note of any fire door that is only hung on two hinges.		
Door Closer Operation		
(1) Does the door fully close and shut tight by use of its own self closing device? (2) Does the door not close fully? (3) Is the door slow to close or is it restricted?		

(4) Does the fire door slam shut with force? (5) Open the door to 5 degrees or 75mm. Does it close and engage with the latch? (6) Is the self closer securely fixed to the door and frame? (7) Is the closer free from damage and not leaking? (8) Has the door closer arm been separated from the frame? (9) Is there any oil leaking from the self closer? (10) If unlatched, does the closer hold the door in line with the frame and intumescent seal? (11) If hung in pairs, do they close in line if both opened and released together?		
Door Coordinator devices (selectors)		
(1) On pairs of doors is there a selector fitted and is it working correctly? (2) Do the individual leaves of pairs of doors with rebated meeting stiles close in the correct sequence		
Door Hold Open Devices		
(1) Are the electromagnetic hold open devices operating correctly and releasing the door(s) when the fire alarm is activated? (2) Is the device / unit securely fixed? (3) Where a 'Dorguard' device is fitted is it operating correctly and holding the door open?		
Lock and Latch		
(1) Is the door furniture firmly fixed and working correctly? (2) Does the latch hold the door firmly in place without rattling? (3) Do the levers fully return to the horizontal after use? (4) Does the latchbolt engage smoothly and completely into the strike?		

(5) Are there any metal dust deposits on the latchbolt or strikeplate?		
Glazing and Glass		
(1) Is the glazing in the fire door loose, does it rattle or is it broken? (2) Are the vision panels in the door clear and unobstructed on both sides of the leaf? (3) Can any glazing fitted be identified as fire resistant? (4) Is the glazing undamaged, properly bedded in and rattle free? (5) Is the intumescent seal continuous and attached to the glass and bead? (6) Are the glazing beads well attached to the frame and free from damage? (7) Is the glass free from damage and cracking? (8) If the glass has been replaced, is it fire rated glass? (9) If glazing panels are below 1500mm from the bottom of the door, is the glass safety glass?		
Fire Signage		
(1) Are the correct signs fitted to all fire doors? (2) Are **Fire Door Keep Shut (or Closed)** signs fitted to both sides of all designated fire doors? (3) Are **Automatic Fire Door Keep Clear** signs fitted on Fire doors with approved hold open devices that are activated to close by the fire alarm system? (4) Are **Fire Door Keep Locked Shut** signs fitted on any fire door that is not self closing such as cleaner's cupboards, store rooms and access to service ducts etc?		