

Fire Door Guidebook

Legislation – Regulations – Standards – Best Practice

FD FIRE DOOR 2019



FD FIRE DOOR
It's our responsibility

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Chapter 1: What is a fire door and how is it tested?

Fire Doors

The term 'fire door' usually refers to a fire door leaf, the main component of a fire door assembly or doorset.

The door leaf is installed into a fire-rated frame, complete with its 'essential ironmongery' to make the door perform correctly in the event of a fire.

The door is tested as a complete assembly or doorset, and can only work correctly if installed using the same compatible components as when it was tested.

What is a Fire Doorset?

Fire Doorset

Fire doorsets are fire doors that are pre-assembled in their frame, and include all the correct components such as ironmongery and seals.

This guarantees that the entire doorset, including the individual components, will match the tested design. It also means that there is less room for error because the compatible components are in place, so you avoid the problem of having to source correct components individually.

What is a Fire Door Assembly?

The components of a fire door assembly are often sourced from different manufacturers, where you can select from a range of products, but they **MUST** be compatible with the door's test evidence. If any individual component gets damaged, it can be replaced from another supplier.

The correct components for a fire door assembly are listed in the manufacturer's instructions (they are also often available on the individual company websites), and can be sourced from any BWF Approved Fire Door Centre or from companies listed in the BWF-CERTIFIRE Fire Door & Doorset Scheme directory.

What components should be fitted to a fire door?

A fire door is not just the door leaf. It is a complete assembly comprising the frame, any glazing, intumescent fire and smoke seals and all the ironmongery that is used on the door, such as hinges, overhead door closers, latches and locks.

'Essential Ironmongery' are those items that are indispensable to the correct performance of the door assembly. (Such as hinges, closers, locks and latches)

Every fire door can only be tested and certificated with all its components in place. They should be third-party certificated to ensure correct performance.

'Non-essential' ironmongery (such as viewers, letterplates) may also be fitted – but they must be correctly installed, in accordance with the door manufacturer's instructions

In the event of a fire, a fire door will not work unless all the correct components have been fitted correctly and maintained.

The components must be compatible with the specific fire door assembly with which it has been tested – shown on the fire door manufacturer's installation instructions.

What happens if I get it wrong?

Fire Doors Small differences in detail such as glazing apertures, intumescent seals, door frames and ironmongery may significantly affect the performance of the door, as this video shows.

(<https://firedoors.bwf.org.uk/assets/with20bwf-sd.mp4>)

The results of changing the specification or not fitting the correct components could be catastrophic.

Chapter 2: Fire Door Seals

Do I need to fit seals on my fire door?

ALL fire doors **MUST** be fitted with the appropriate seals.

They are designed to expand under heat and fill the gaps between the door leaf and frame, thereby preventing the passage of smoke and fire to other parts or compartments of the building. Acoustic seals may also be required which have an additional role of preventing the passage of sound.

Intumescent seals may be placed into grooves machined in the two vertical sections and top edge of the door frame. When exposed to heat, intumescent seals expand to many times their original size, sealing the gap between the door and the frame and aiding containment of the fire.

The materials contained in the seals, (such as sodium silicate or graphite), differ between seal manufacturers, and expand at different rates. It's important to use the same type of seals around the door, when installing or replacing seals.

What about other types of seals, such as Smoke Seals?

You can also obtain combined Intumescent and Smoke Seals. These are designed to provide additional protection to prevent the passage of cold smoke. In some circumstances, smoke seals are a Building Regulation requirement.

Acoustic seals may also be required in certain situations such as in flats, apartments, doctor's surgeries and schools. These act to provide an additional role to reduce the sound which can travel between the door and frame, or door and floor.

Uninterrupted intumescent strips should be fitted into the frame or lining, where possible. If this cannot be achieved, the intumescent seals may be fitted into the door edge. The recommended seal size for most modern 30-minute doors, other than doorsets, is 15mm X 4mm. The recommended seal size for most modern 60-minute fire doors is 20mm X 4mm, or 2 No. 10mmX4mm.

Intumescent seals **MUST** be used as recommended by the door leaf manufacturer.

What gaps are required around a door and its frame? The gap between the door and the frame is extremely important and must be suitable for the intumescent seal fitted.

In general, the gap should not exceed 3mm along the 2 long edges and across top of the door leaf.

To facilitate checking of the gap on site, a BWF-CERTIFIRE Scheme GapTester is available free of charge on request.

The gap at the bottom of the door is usually around 10mm* for non-smoke conditions **but must be no more than 3mm** when smoke seals are required.

** Check the door manufacturer's instructions*

Chapter 3: Fire Door Components

What is meant by the term 'Essential Ironmongery'?

Essential Ironmongery such as hinges, closers, locks and latches should be CE marked and CERTIFIRE Approved and are vital to the fire resistance performance of the door assembly.

What hinges should I use?

Hinges (or butts) must comply to annex B of BS EN 1935 – MUST be CERTIFIRE Approved. Usually 1 ½ pairs made of metal with melting point above 800°C.

Rising butt or spring hinges are **NOT permitted**.

What closers should I use?

Closers (on non-latched doors) MUST be CERTIFIRE Approved and tested to BS EN 1154. There are two types:

Face-fixed overhead closers fixed to the face of the door or frame which automatically closes the leaf from fully open position

Concealed / spring closers which are concealed in the door leaf and use a spring to close door from open position.

What latch or mortice lock should I use?

Mortice or tubular mortice must comply with BS EN 12209. These may be lockable or un-lockable types depending on door requirements.

What lever handle should I use?

Lever Handles must comply with BS EN 1906 – and meet minimum grade 3 durability. Fixing should be bolt trough and not face fixed with screws.

Pull Handles, knobs, spyholes are NOT classed as 'Essential Ironmongery' but are still vital to the fire resistance performance of the door and should have fire test evidence in accordance with their respective BE EN Standards.

You must still refer to fire door manufacturer's instructions before fitting such components.

What signage should I use?

For Fire Doors with a mechanical closer, 'Fire Door keep shut' signs should be used on both sides of the door. Fire Doors without a closer (small locked store cupboard) 'Fire Door Keep Locked' sign should be used on the external face of the door. Fire Doors with automatic closer or held back on magnets should have 'Automatic Fire Door Keep Clear' sign affixed to both sides of the door. Signs should be positioned at 1500mm from finished floor level.

Can I use letterplates / letterboxes on a fire door?

Yes, you can but they MUST be tested and CERTIFIRE Approved.

You must also check that the door has been certificated/tested for use with letterplates / letterboxes.

Check the fire door manufacturer's instructions, or if in doubt, contact the door manufacturer.

Chapter:4 Fire Door Frames

Do I need special door frames for fire doors?

The practice of 'knocking up' a door frame on site or in a workshop, hanging a door and believing that the result constituted a valid fire door installation was never correct.

Door frames should be purchased from the door manufacture, or from a company licensed to manufacture them or via a BWF Approved Fire Door Centre.

60-minute fire doors – Frames should be made of hardwood with a density greater than 650 kg/m³

30-minute fire doors – Frames or linings can be made of softwood, with a minimum density of 450 kg/m³ (or to match the density and frame dimensions given in the manufacturers' installation instructions)

You should check the suitability of different timber species for doorframes with the door manufacturer, since some materials such as Ash are **NOT RECOMMENDED** by many door manufacturers.

How is a door stop installed?

Door stops, which assist the door in latching – can be cut out of the solid frame (a rebate is produced to form a stop for the door) or 'planted'.

The planted section should be fixed by pinning or gluing and pinning the stop to the frame.

How thick should my fire door frame or lining be?

Frame or lining thickness would usually be tested at a minimum 30 mm (finished size, excluding stops) or the thickness given in the manufacturers' installation instructions, to ensure hinge screws hold securely.

Can I use the existing door frames or MDF?

MDF or chipboard frames and linings are permitted by **SOME** door manufacturers where test evidence allows. The use of MDF or chipboard may **NOT** always apply to every door in the manufacturer's range.

What considerations are there for the supporting construction for a fire door frame?

The frame or lining should be constructed into a brick, block or masonry wall or an appropriate timber stud/plasterboard lined partition capable of being equal to the rating of the door assembly. Any voids between the frame / lining and the wall should be infilled with mineral fibre or intumescent paste. In the case of FD 60 doors (or higher) : refer to Table 3 : BS 8214 2016.

Do I fit seals into the frame or door?

ALL fire doors **MUST** be fitted with the appropriate seals. Where possible, the seals should be fitted to the frame.

Intumescent seals **MUST** be used as recommended by the door leaf manufacturer.

Can I use an existing door frame, or must I always use a new one?

There may be circumstances where fitting new frames is not possible or practicable.

The thickness of the existing frame should be checked to ensure it meets the requirements of the installation instructions, and guidance sought if undersize.

In these situations, it may be more practicable to fit intumescent seals into the door edge* if grooving the frame is difficult.

** Care must be taken to ensure the fire door label is not damaged*

What gaps are required around a door and its frame?

The gap between the door and the frame is extremely important and must be suitable for the intumescent seal fitted.

In general, the gap should not exceed 3mm along the 2 long edges and across top of the door leaf – to facilitate checking of the gap on site, a BWF-CERTIFIRE Scheme GapTester is available on request.

The gap at the bottom of the door is usually around 10mm* for non-smoke conditions **BUT** 3mm when smoke seals are required.

** Check the door manufacturer's instructions*

Chapter 5: Fire Door Installation

Fire Door Installation

Installation of fire doors is as life critical as the product specification itself and should only be carried out by someone who is competent, has been specifically trained to install fire doors and understands their responsibilities in getting it right (and ideally as part of a third party certificated process). Fire doors that are incorrectly installed and fitted with incompatible components invalidate certification and will not provide adequate protection for occupants or the building. All fire doors supplied through the Fire Door Alliance are provided with installation instructions that are specific to the product. Installation methods and materials can change depending on a number of factors, including product type and installation environment and so it is vital that these are referred to and adhered to.

Key things to remember when installing a fire door:

Any individual fitting a fire door should be fully trained and competent to do so

Look for a label or a plug to show that the door is certificated and check the instructions/certificate supplied

Essential Ironmongery such as locks, latches, closers and hinges **MUST** be CE marked, firmly fixed with no missing screws and compatible with the door leaf's certification.

The choice of frame/lining/casing and intumescent/smoke seals should also be compatible

The instructions on the door – they should be followed to ensure correct installation

The frame specification – should be correct for the door's fire rating

The Building Regulations – are you following ALL of them correctly

Apertures **ONLY** from Licensed Converters – **DO NOT** cut apertures on site. Cutting apertures for glazing and air transfer grilles will make certification **VOID** as will trimming the door more than is permitted or taking off certification markings

The gap between door and frame at the top and sides should be 2-4 mm and the threshold gap as per manufacturer's instructions (typically around 8-10 mm) – the certificate will include details of this

Ensure any voids between door frame and wall are tightly packed with mineral wool

Check the certificate to ensure that you are only using compatible ironmongery (hinges, closers etc) and intumescent seals (in all the right places)

Once complete. check that the closer shuts the door onto the latch from any position

The BWF Fire Door Installation Guide includes more detailed guidance and a range of handy checklists, it can be downloaded [here](#)

You can see our top tips for installing fire door video here: <https://youtu.be/2E0bYD1I16E>

How do I fit glazed or non-glazed apertures in a fire door?

In some situations, 'glazed vision panels' or 'glazed apertures' are required to be added to the door to allow for additional light or vision of the other side of the door. Non-glazed apertures may be required in the case of louvre panels or air transfer grilles.

It is vital to remember that the addition of ANY apertures will seriously affect the performance of the door unless it is undertaken ONLY by companies that are licensed and approved to carry out this type of work to agreed procedures. Cutting and glazing apertures must NEVER be undertaken on site and will negate the door's test certificate.

Installation training

The British Woodworking Federation (BWF) has developed a new qualification specifically to target the installation of fire doors in the UK. – the course focusses on individual competency and enables endorsement as a Fire Door and Doorset Installer on the CSCS Card.

The course is designed to be a practical introduction to installing fire doors and will cover a range of topics including: the fitting of fire doors, fire door frames and linings; understanding and fitting of fire door ironmongery and seals; the inclusion of apertures and associated fire regulations related to the fitting of glass; and the effects of use on fire door performance.

The qualification will be available as an optional unit for apprentices initially via the NPTC Group of Colleges (although BWF is actively working to grow the network of suppliers) as well as a two to three-day course and assessment option aimed at experienced tradespeople. It will enable individuals to work towards and achieve unit 358 'Installing fire resisting timber door assemblies and doorsets in the workplace'. Once achieved, the unit can be displayed on the reverse of the



Construction Skills Certification Scheme (CSCS) card, which is used to demonstrate that individuals working on construction sites have the required training and qualifications for the type of work they carry out.

Chapter 6: The Importance of Regular Fire Door Inspection and Maintenance

Fire Door Inspection and Maintenance

Fire doors should be regularly inspected for damage that may prevent the door from performing in the event of a fire. This may form part of the risk assessment for the building. Any issues should be fixed as soon as possible using compatible, correct fire rated components. The selection of suitable components is supported by the Fire Certificate and door schedule.

To check compatibility of components, always check the Fire Certificate data sheet or contact the fire door manufacturer. By not using compatible components as listed on the Fire Certificate, fire certification of the door will be invalidated.

Frequency of Inspection

Periodic checks should be carried out at least once **every six months**

Newly occupied buildings may require more frequent checks in the first year of use • Doors where traffic is high are likely to be more susceptible to damage and should be checked more frequently than other doors in the building. E.g. once per week/month (depending on usage)

What the law says about Fire Door Inspections

Article 17 of the Fire Safety Order makes it a legal requirement to ensure that fire resisting doors and escape doors are correctly installed and adequately maintained in order for them to be fit for purpose. The authorities have the power to enforce the Fire Safety Order and do prosecute or even close buildings down where breaches are discovered. Building owners need 'competent persons' as referenced in the Fire Safety Order to help them comply with fire door regulations.

Do fire doors need maintenance?

Yes, as with any other life-saving product, a fire door should be checked regularly to ensure it functions correctly and is ready to use. It should be considered in exactly the same way as testing a smoke alarm or a fire extinguisher.

Any slight alteration to the door or its surroundings can affect the performance of a door.

Click here to view our simple video checklist – (<https://youtu.be/3LeJKupGRq4>)

Remember, you must inspect and maintain doors correctly and can be prosecuted under the Regulatory Reform (Fire Safety) Order if you fail to do so.

Chapter 7: Fire Door Inspection Scheme (FDIS) – How to prove competency when inspecting fire doors

FDIS education program provides the route to becoming a competent person to inspect fire doors.

Building owners need 'competent persons' as referenced in the Fire Safety Order to help them comply with fire door regulations. The FDIS education programmes provide the path to becoming that competent person.

The FDIS is the first such scheme in Europe. FDIS transform people's knowledge about how and why fire doors work and the potential dangers of getting it wrong.

FDIS seeks to:

Help improve safety and save lives through creating a new pool of expertise and competence to help those with legal responsibilities under fire regulations

Provide a vital new resource to help the 'Responsible Person' complete fire risk assessments for the premises they manage

Raise awareness of defective fire doors and the potentially tragic consequences of leaving these unchecked

The FDIS is delivered by the BWF-Fire Door Alliance and the Guild of Architectural Ironmongers (GAI) – both leading authorities in their fields. FDIS provides:

A unique online learning centre leading to a Diploma in Fire Doors

A route for diploma holders to become Certificated Fire Door Inspectors through independent assessment by Exova Warringtonfire

FDIS Inspectors who can provide the most comprehensive and highest standard of inspection in the UK and Ireland

Database of all inspected Fire Door installations in the UK

Chapter 8: Specification

The correct specification, fitting, maintenance and inspection are the responsibility of each, and every person involved in the process from specification to maintenance.

Specifying the right fire door can be a life or death responsibility. There were 334 fire-related fatalities in England, including 71 the Home Office counts as occurring as a result of Grenfell Tower fire. The last time this was higher was 2010/11 when there were 335 deaths.

The performance requirements of fire doors or doorsets and their locations within a building are dictated by national building regulations.

Fire doors help sub-divide a building into compartments, slowing down the spread of fire and allowing occupants to escape.

Fire doors and doorsets are rated in minutes and prefixed by the letters FD.

The building regulation relates to the entire door installation, and not just the door alone. Because of this, fire doors are not tested as individual leaves, but as a complete installation, along with frame, locks, latches and other essential ironmongery.

In certain applications, the regulations may state that smoke control is also required as an additional requirement. In these cases, the fire door will be designated by the suffix 's' and a combined intumescent and smoke seal must be fitted.

Doors are tested to BS 476 Part 22 to represent how they will function in a fire.

The following table denotes the fire door rating and nomenclature for fire door assemblies

Fire door rating	Standard fire door/doorset	Fire door & smoke seals
30 minutes	FD 30	FD 30 S
60 minutes	FD 60	FD 60 S
90 minutes	FD 90	FD 90 S
120 minutes	FD 120	FD 120 S

Chapter 9: Regulations

What regulations affect the use of fire doors?

There are some regulations which apply to both new and existing buildings across the UK.

In the case of new buildings, or those which include alterations, extensions or change of use, the appropriate Building Regulations apply.

Existing buildings, other than domestic properties, are governed by the requirements of the Regulatory Reform (Fire Safety) Order: 2005 – otherwise known as the RRO or FSO

You should also take note of Regulation 38 of the Building Regulations (England and Wales) which links the Building Regulations to the RRO for those buildings to which the RRO applies.

New Buildings

Building Regulations are known as **Approved Documents** (or equivalent) and are available from the websites shown below. They are designed to help meet the **minimum** standards required for construction in the UK.

Because fire doors are functional items and are necessary in all buildings and structures, they are required to meet a number of different regulations such as sound, accessibility, ventilation, thermal efficiency and safety glazing as well as fire safety.

A summary of Approved Document regulations in England, Scotland, Wales and Northern Ireland is shown in the table below.

- England and Wales – Approved Documents
- Scottish Building Standards – Technical Handbooks
- Northern Ireland – Technical Booklets

Other Regulations and Codes

In addition to building regulations, fire doors may also be required to comply with other codes and standards to meet BREEAM and the Code for Sustainable Homes criteria, as well as procurement requirements for responsible sourcing of materials such as those provided by forest certification and chain of custody required under CPET regulations, which apply to ALL projects undertaken by UK Government Public Sector and its agencies.

Existing buildings

The Regulatory Reform (Fire Safety) Order 2005 or FSO, replaced over 70 pieces of fire safety law and came into force in 2006.

The responsibility for fire risk assessment in ***all non-domestic buildings***, including the common parts of flats and houses of multiple occupation, falls to the so-called 'responsible person'.

Under the FSO, the responsible person must carry out a fire safety risk assessment and implement and maintain a fire management plan. Further information on what you need to do when carrying out a risk assessment is available [here](#).

The law applies to you if you are:

- responsible for business premises
- an employer or self-employed with business premises
- responsible for a part of a dwelling where that part is *solely* used for business purposes
- a charity or voluntary organisation
- a contractor with a degree of control over any premises
- providing accommodation for paying guests

Fire doors play a major role in the fire safety and protection of ALL buildings covered by the FSO and it is important that fire doors are inspected correctly and maintained in order to ensure compliance.

Failure to do so can place property and lives at risk and is likely to result in criminal prosecution.

References

Information contained within this guidebook has been repurposed for use by FD Fire Door Ltd using the following resources –

<https://firedoors.bwf.org.uk>

<http://www.legislation.gov.uk/uksi/2005/1541/contents>

<https://www.gov.scot/policies/building-standards/monitoring-improving-building-regulations/>

<http://www.buildingcontrol-ni.com/>

<https://www.gov.uk/government/publications/fire-safety-approved-document-b>

<http://www.legislation.gov.uk/uksi/2010/2214/regulation/38>

<http://www.legislation.gov.uk/uksi/2005/1541/contents>

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