

Fire Doors, Shutters and Dampers

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Fire doors are an essential part of the risk management strategy for every building. When properly installed and maintained, they help save lives and minimise losses from the effects of fire, heat and smoke.



Introduction

Fire doors – when installed correctly in the right places – are essential to the design of every building. Along with automatic sprinkler systems, heat and smoke venting systems and fire compartmentation, fire doors play a vital role in protecting property and lives.

Please note, where we say ‘fire door’ or ‘door’ in this guide, the information applies to all fire doors, fire shutters and fire dampers.

Uses and Benefits of Fire Doors

The main purpose of fire doors is to help prevent fire and the products of combustion spreading from one area of a building to another.

Fire doors (including their frames and fittings) are installed to protect an opening in a fire compartment wall and should meet the performance criteria for their intended use.

The benefits of fire doors are they:

- Reduce the risks to a building’s **occupants** by resisting the spread of fire, heat and smoke
- Contain the size and spread of a fire, making firefighting easier
- Minimise the damage to the building and its contents – and therefore the disruption to the occupants or businesses using the building

Types of Fire Doors

There are various different types of fire doors:

- Timber and mineral cored, timber faced doors
- Hinged steel doors
- Roller shutters and lateral operating shutters
- Folding shutter doors
- Sliding doors
- Lift landing doors
- Escalator shutters
- Conveyor system closures

The type of fire door recommended will depend on its location, use and purpose (some fire doors have more universal applications than others). Things to consider include the means of escape, personnel access, conveyor openings, and vehicle or stock movement.



Fire Door Specifications

Fire door specifications vary depending on the opening in the fire compartmentation wall that the door is designed to protect, for example:

- Common walls of different adjoining buildings
- Walls within an individual building divided into separate parts or occupancies
- Construction around hazardous areas, or operational areas that are critical to an organisation

UK building regulations cover the legal requirements for the construction and extension of buildings, mainly focusing on means of escape and saving lives. This should always be the minimum standard provided.

However, the minimum standards may not be adequate to meet the needs of property owners, businesses and insurers, who will want to ensure assets are protected and businesses are resilient, so **it's important additional** measures are considered, such as:

- Increasing the fire resistance, integrity and insulation of the door
- Creating a clear zone on either side of the door
- Providing another door in tandem, or a secondary air lock compartment
- Protecting the door with automatic sprinklers

Fire Resistance

Fire resistance is the ability of a fire door and assembly (door frame and hardware) to maintain its integrity in resisting the passage of fire, hot gases and smoke in accordance with specified performance criteria.

This resistance is measured in minutes, for example, a fire door with 60 minutes of fire resistance would be rated **FD60**. **Where enhanced smoke leakage resistance is required at ambient temperatures, fire door ratings have an 'S' suffix (e.g., FD60S).**

As a minimum, the fire resistance rating of a door (and all of its components) should be the same as the fire resistance rating of the fire compartment wall it sits within. For example:

- A 2-hour rated fire compartment wall with a 1-hour rated fire door becomes a 1-hour rated wall. This is because the fire can spread anywhere along the wall, making the under-rated door a weakness
- A 2-hour door and frame with a 30-minute vision panel is actually a 30-minute door, because once the vision panel fails the door becomes compromised
- Depending on the use, value, or nature of the business using the building, two fire doors in tandem with an intermediary airlock may be required. This means that if one door fails the other can still actuate, offering further protection

Uninsulated Fire Doors

Uninsulated fire doors (i.e., doors that only provide integrity and not thermal insulation) can reduce the effectiveness of a fire compartment wall, by allowing the transfer of radiated and conductive heat in the event of a fire. This means a fire on one side of a wall can radiate or conduct heat via the uninsulated door, and ignite combustible materials, linings and surfaces on the other side of the door. In this instance the:

- Distance between such materials and the door should be increased
- Uninsulated door should be replaced with an insulated fire door (or doors in tandem)

Installing Fire Doors

It's important to ensure all doors within fire compartment walls are suitable for purpose, by referring to building regulations and fire test reports. As well as the actual door, this includes existing openings, planned new openings, and alterations or changes.

As with all fire protection equipment, the products and installers should be approved and certified – the [Red Book Live](#) can help with this. It's also advisable to consult insurers and any other interested parties before installation.

Any fire doors installed should also:

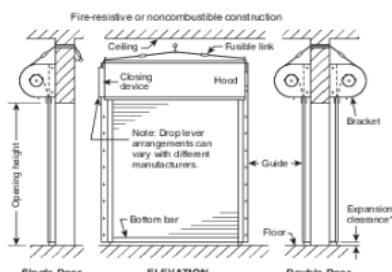
- Be resistant to the passage of fire, hot gases and smoke to the required fire resistance rating in minutes
- Be smoke resistant, where enhanced protection is required
- Be strong and impact resistant – suitable for the amount of intended use and protected from the impact of equipment
- Be durable enough for ambient conditions, over the anticipated lifetime of the door
- Not contribute to fire growth beyond specified test parameters

Fire Door Actuation

If doors are normally kept open, in a fire situation they need to close as soon as possible. This should be automatic, but a manual override can be used as a backup. When selecting the actuation mechanism, things to consider include:

- The type of fire signature that's most likely
- Automatic fire detection
- Manual fire alarms
- Ceiling and roof height
- Location of the actuating device

If a fusible element, or frangible or quartzoid bulb actuating device is used, it needs to be located on both sides of the fire compartment wall, at a high level close to the roof or ceiling deck. It's not acceptable to have the actuating device near to the top of the door, because during a fire heat rises and collects at roof or ceiling level. Actuation elements located away from the roof or ceiling deck will be significantly delayed in operating during a fire and may allow fire or smoke to pass through before the door closes.



* Expansion clearance per door listing. Doors with downward expansion are as shown. Doors with upward expansion require expansion clearance above the top of the door.

Note: Fusible links are needed on both sides of the wall — configuration could vary.

FIGURE A-4.7.4.2(k) Rolling Steel Doors — Surface Mounted.

Source: NFPA 80 – Standard for Fire Doors and Other Opening Protectives

In terms of reliability, automatically actuated roller shutter doors have around a 50-70% success rate. Failures in preventing fire spread include:

- Delays in actuation (e.g., actuating device is too low from the ceiling)
- No actuation (e.g., actuation device is impaired or has been painted over)
- The shutter door not fully closing (e.g., track is pinched, or objects are stored below the shutter)
- Fire spreading before the door closes (e.g., fire spreads to storage too close to the other side of the door)
- Gaps around the door frame

Inspections, Testing and Maintenance

It's essential to have a documented inspection, testing and maintenance programme for all fire doors. This should be carried out by a competent person, who has the required level of knowledge, experience and training.

Preventative maintenance and servicing should be carried out by qualified engineers, in accordance with the manufacturer's specifications.

Where damage or deterioration has occurred to any fire door, frame, or actuation device, it should be considered a fire protection equipment impairment and remedied immediately. Attention should be paid to:

- Actuation devices
- Painted or damaged fusible elements, or frangible or quartzoid bulbs
- Frames and runners being damaged, bent or pinched
- Painted intumescent or smoke seals on doors or door frames
- Gaps or penetrations around door frames or runners
- Cracked or broken glazing in the door
- **Glazing beading or sealant that's loose, missing or broken**
- Damaged hinges (or other door furniture)
- Interlocks and cause and effects not operating as they should (e.g., the door not closing upon fire alarm actuation)
- Doors wedged open or blocked
- Doors not closing when released, grounding out, or not sitting correctly in the frame

Summary

Properly installed fire doors consistent with the building's fire compartmentation philosophy will help prevent or minimise any loss due to the effects of fire, heat and smoke spreading. Appropriately installed and maintained fire doors are an essential part of the fire compartment risk management strategy of a building.

Checklist

A generic Fire Doors, Fire Shutters and Fire Dampers Checklist is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners.

For more information please visit:

[Aviva Risk Management Solutions – Specialist Partners](#)

Sources and Useful Links

- [Approved Document B: Fire safety \(Volume 2 – Buildings other than Dwelling houses\) Incorporating Insurers' Requirements for Property Protection](#)
- [FPA Design Guide for the Fire Protection of Buildings – Core Document Compartmentation](#)
- [Details of LPCB approved installers and products](#) – Red Book Live
- [Loss Prevention Certification Board LPS 1056 – Requirements for the LPCB approval and listing of fire doorsets, lift landing doors and shutters](#) – Red Book Live
- [NFPA 80 – Standard for Fire Doors and Other Opening Protectives](#)

Additional Information

Relevant Loss Prevention Standards include:

- Smoke Contamination
- Fire Compartmentation

To find out more, please visit [Aviva Risk Management Solutions](#) or speak to one of our advisors.

Email us at riskadvice@aviva.com or call 0345 366 6666.*

*Calls may be recorded and/or monitored for our joint protection.

Appendix 1 – Fire Doors, Fire Shutters and Fire Dampers Checklist



Location	
Date	
Completed by (name and signature)	

	Fire Doors, Shutters and Dampers Checklist	Y/N	Comments
1.	Are there accurate fire compartmentation wall and floor drawings for the site?		
2.	Is the fire compartmentation and use of fire doors consistent with the needs of the site? Consider: <ul style="list-style-type: none"> • Life safety? • Property values? • Business impact and interruption? • Smoke sensitivity? 		
3.	Are all fire doors, shutters and dampers identified on the fire compartmentation documentation (including within ventilation and ducting systems)?		
4.	Are any third parties used accredited and certified? Consider: <ul style="list-style-type: none"> • Organisations used for any design, installation or maintenance activities? • Manufacturers of products and equipment? 		
5.	Is each fire door, shutter and damper (and all frames, fixtures and fittings) rated consistently with the fire resistance rating of the fire compartment wall? Consider: <ul style="list-style-type: none"> • Integrity? • Insulation? • Glazed elements? 		

	Fire Doors, Shutters and Dampers Checklist Contd.	Y/N	Comments
6.	Are all fire doors, shutters and dampers listed with: <ul style="list-style-type: none"> • Their own unique identifier? • A fire resistance rating? • Any smoke protection enhancement? • A method of automatic actuation? 		
7.	For each fire door, shutter or damper, should enhanced smoke leakage resistance be provided?		
8.	Are fire doors, shutters and dampers included in regular site self-inspections by a competent person (e.g., daily or weekly housekeeping checks)?		
9.	Are formal, documented fire door inspections completed by a competent person: <ul style="list-style-type: none"> • Monthly? • Quarterly? Does this include closing doors, rolling shutters down, and checking door frames, runners and tracks?		
10.	Are any doors actuated by a fusible element or frangible bulbs? If so, are the bulbs or fusible elements: <ul style="list-style-type: none"> • Located close to the roof or ceiling deck on both sides of the compartment wall? • Checked for damage, or if they've been painted over? 		
11.	Can any fusible link or frangible bulb actuation be replaced with a faster-acting automatic fire detection, with devices located on both sides of the fire compartment wall? (If the use of the building means it's sensitive to smoke damage or smoke contamination, this should be considered a high priority)		
12.	Are formal fire door, shutter and damper audits and maintenance schedules completed annually? Do they include trip tests, drop tests and actuation of automatic parts?		

	Fire Doors, Shutters and Dampers Checklist Contd.	Y/N	Comments
13.	Is the automatic closing operation of fire doors overridden or delayed for evacuation purposes? If yes, could alternative routes or additional means of escape doors be fitted and this door closure delay removed?		
14.	Is there any damage, deterioration, wear and tear, or alteration to any of the doors?		
15.	Are intumescent strips or smoke seals in good condition? Note, they should not be painted or damaged.		
16.	Can all fire doors and shutters close freely as intended, without any obstructions?		
17.	Are any fire doors propped or wedged open at any time? If yes, consider automatic door closures linked to the fire alarm.		
18.	Are any doors that close automatically upon automatic fire alarm actuation verified during routine fire alarm tests?		
19.	Are any doors that can be manually released with a push-button checked quarterly?		
20.	Are any fire doors prone to damage or wear and tear? If so, are they appropriately protected?		
21.	Is a clear space or sterile area of at least 2m (in all directions) maintained on both sides of every fire door? Is this area kept clear of stock, contents and combustible materials?		

	Fire Doors, Shutters and Dampers Checklist Contd.	Y/N	Comments
22.	<p>Is there the potential for combustible or flammable liquids to pass under a closed fire door? Consider if:</p> <ul style="list-style-type: none"> • They could be on the surface of any fire water in the event of a fire? • This is clearly identified in the fire risk assessment? • There are any liquid retention or flow prevention measures in place at the plane of the fire compartment wall/door enclosure to prevent this from happening? 		
23.	<p>Are conveyors or production lines passing through a fire compartment wall opening interlocked to shut down, and cleared of materials, before the fire door closes?</p> <ul style="list-style-type: none"> • Is this done so that the contents on the conveyor don't block the fire door operation? • Is the conveyor or production line segmented to enable the fire door to close? 		
24.	<p>Are all normally open fire doors, shutters and dampers closed when the premises are vacated or at the end of the working day?</p>		
25.	<p>Additional comments:</p>		

Please Note

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