

Fire Doors, Shutters, Dampers and Collars

Fire doors, shutters, dampers and collars are essential components of a building's fire compartmentation strategy. When properly installed and maintained, they can help reduce the potential for fire spread and associated damage.

This Loss Prevention Standard provides guidance on selecting and maintaining the most appropriate equipment and products, choosing installers and the ongoing care of fire doors, shutters, dampers and collars.

Fire Doors, Shutters, Dampers and Collars

Introduction

Fire compartmentation is used to help contain the spread of fire, smoke and other combustion products within a building or adjoining buildings. It can also, in some cases, improve the building's resilience to fire.

Fire doors, shutters, dampers and collars are used to ensure the openings and penetrations to fire compartments for doorways, windows, ducting, pipework, etc., maintain the fire compartment's fire-resistance rating, and, when installed correctly, are essential to the design of every building.



Along with automatic sprinkler systems and heat and smoke venting systems, this equipment plays a vital role in helping to prevent fire spread through a building.

This document discusses the benefits of fire doors, shutters, dampers and collars in more detail and provides guidance on installation and maintenance.

Note: This Loss Prevention Standard relates to internal fire doors, shutters, dampers and collars and is focussed on property loss prevention and related risk management guidance. It is not intended to address liability exposures. The presumption is that all regulatory requirements, such as fire risk assessments and compliance with local building regulations, codes, or standards, have or will be met.

Understanding the Risks

Fire compartmentation is used to help contain the spread of fire, smoke and other combustion products within a building or adjoining buildings and improve the building's resilience to fire. It is normally achieved by the provision of a fire-resistant building frame, and the subdivision of the building into fire compartments using fire-resisting materials and assemblies, specifically designed and tested for their resilience against fire.

Fire compartmentation can however be compromised by a variety of different openings, including doors, vehicle access, windows, service hatches, air handling and extraction ductwork and flues, pipework, IT services and cabling, electrical wiring, etc. To help maintain the fire resistance rating, which is usually specified in minutes for insulation and integrity, fire doors, shutters, dampers and collars can be installed.

The main risks of compromised compartmentation include:

- **Fire Growth.** Compromised compartments can allow free movement of oxygen across work areas, increasing the rate of fire growth.
- **Containment.** Uncontained fires can grow quickly presenting firefighting challenges.
- **Damage.** Fires in inadequately compartmented buildings are likely to spread and typically result in more significant levels of damage.
- **Business Interruption.** Large fire incidents often result in increased business interruption losses.
- **Environmental Impacts.** Large fires can also result in more environmental damage, as increased volumes of smoke and firefighting water runoff are generated.

Note: National building regulations, standards or codes which relate to life safety and means of escape should always be the minimum standard provided. However, they may be inadequate in protecting assets or ensuring business resilience.

Material Damage Risk Assessment

Before designing and installing any fire compartmentation, including fire doors, shutters, dampers or collars, an assessment of the anticipated/potential financial losses, for both material damage and business interruption exposures, in the event of a significant or catastrophic loss event, should be undertaken.

This helps ensure that the measures are sufficient and reflective of the potential property loss estimates.

Refer to the Aviva Loss Prevention Standards **Material Damage Risk Assessment** and **Business Impact Analysis** for further guidance.

Managing Change

Any proposed changes to the buildings, equipment and activities relating to the installation of fire doors, shutters, dampers or collars should be managed through a formal Management of Change process. This helps ensure all stages of the change are progressed with minimal exposure to the existing arrangements.

- These proposed changes should also be discussed with your Property Insurer and Insurance Broker.

Refer to the Aviva Loss Prevention Standards **Managing Change** for further guidance.

Fire Compartmentation

This document focusses on fire doors, shutters, dampers and collars. For guidance on fire compartmentation refer to the Aviva Loss Prevention Standard **Fire Compartmentation**.

Fire Doors, Shutters, Dampers and Collars - Considerations

Fire Resistance

Fire resistance is the ability of materials or products, which includes fire doors, dampers and collars to maintain their integrity in resisting the passage of fire, hot gases and smoke in accordance with specified performance criteria, e.g., independent test standards.

This resistance is typically measured in minutes. In the United Kingdom 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 fire door, shutter, damper or collar, and any associated components, should be the same as the fire resistance rating of the fire compartment wall, ceiling, etc., it is installed within. For example:

- A 2-hour rated fire compartment wall with a 60 minute-rated fire shutter becomes a 1 hour-rated wall. This is because the fire can spread anywhere along the wall, making the underrated shutter a weakness.
- A 2-hour rated fire door and frame with a 30 minute-rated vision panel is a 30 minute-rated fire door, given the door will be compromised as soon as the vision panel fails.

Fire resistance ratings of up to 240 minutes are generally available for fire doors, shutters, dampers and collars and would be used in conjunction with fire compartments requiring a 4-hour fire resistance rating.

Important: The use of two lower-rated fire doors or shutters on a single opening to achieve a higher fire resistance rating, e.g., two 60-minute fire doors on a 2-hour rated compartment wall, is generally not recommended. The individual fire ratings of 60 minutes do not automatically combine to provide 2 hours' fire resistance. The proposed arrangement would need to be assessed against local regulations, standards or codes and likely verified by a competent person.

Note: Uninsulated fire doors (i.e., doors that only provide integrity and not thermal insulation) are available, however are designed for use in low-risk areas such as internal partitions, office corridors, etc., and should not be installed on fire compartment walls. Such an arrangement would 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 that a fire on one side of a wall could radiate or conduct heat via the uninsulated door, and ignite combustible materials, linings and surfaces on the other side of the door. Where noted, uninsulated doors should be replaced with an insulated fire door with the appropriate fire resistance rating.

Testing and Accreditations

Fire resistance rating is normally based on accepted testing standards or codes. In the UK and Europe, this is commonly for products that have been tested against various fire resistance tests. These are currently:

Fire Doors and Shutters. Fire doors and shutters should be compliant with:

- **BS 476-22: Fire tests on building materials and structures - Methods for determination of the fire resistance of non-loadbearing elements of construction** or,
- **BS EN 1634-1: Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Fire resistance test**, and which are subsequently classified in;

- **BS EN 13501-2: Fire classification of construction products and building elements - Classification using data from fire resistance and/or smoke control tests, excluding ventilation services.**

Fire doors and shutters that comply with **BS EN 1634-1** will be certified and marked or stamped as complying with harmonised product standard **BS EN 16034: Pedestrian door sets, industrial, commercial, garage doors and openable windows. Product standard, performance characteristics. Fire resisting and/or smoke control characteristics.** A fire resistance period will also be indicated on the fire door or shutter. A fire resistance period will also be indicated on the fire door or shutter, usually on the manufacturers data plate affixed.

Fire door and fire shutter products can also be tested to comply with Loss Prevention Certification board (LPCB) Loss Prevention Standard **LPS 1056: Issue 6.2 Requirements for the LPCB Approval and Listing of Fire Doorsets, Lift Landing Doors and Shutters.** This is voluntary certification that draws upon testing criteria from several standards including BS476-22 and BS EN 1634-1, and which provides third-party testing and certification. Certified products are listed in the LPCB Red Book accessible [here](#).

Fire Dampers. Fire dampers should be compliant with:

- **BS EN 1366-2: Fire resistance tests for service installations - Fire dampers** and classified in,
- **BS EN 13501-3: Fire classification of construction products and building elements - Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ventilation ducts and fire dampers and/or power, control and communication cables.**

Fire dampers that comply with **BS EN 1366-2** will be certified and marked or stamped as complying with harmonised product standard **BS EN 15650: Ventilation for buildings - Fire dampers.** A fire resistance period for integrity and insulation will also be indicated on the fire damper.

Important: Fire dampers are not normally installed in kitchen extraction ducting. During a fire event involving kitchen equipment, the extraction normally continually operates. The fire damper would also become impaired with accumulations of cooking grease and other deposits requiring regular cleaning. Any plans to install a fire damper in kitchen extraction systems should always be discussed with your insurer and broker.

Note: Smoke control dampers are used to manage the movement of smoke in a fire for evacuation and fire safety purposes. These are not discussed in this document.

Fire Collars. Fire collars are used to seal pipe penetrations through fire compartment walls and floors. They work by expanding in a fire to seal pipe penetrations, helping to prevent the spread of fire and smoke. Fire collars should be compliant with:

BS 476-20: Method for determination of the fire resistance of elements of construction (general principles),

BS EN 1366-3: Fire resistance tests for service installations - Penetration seals.

BS EN 13501-2: Fire classification of construction products and building elements - Classification using data from fire resistance and/or smoke control tests, excluding ventilation services.

Important: In the United Kingdom from September 2029, **BS 476: Parts 20 to 24** will cease to be used for new materials testing, and their use is declining. Existing products accredited to BS 476: Parts 20 to 24 will continue to be acceptable for ongoing use, subject to being satisfactorily maintained in good working order, tested, inspected, etc.

Installation Standards

To ensure fire doors, shutters, dampers and collars are installed correctly and achieve the required fire resistance rating, installation should be carried out in accordance with Original Equipment Manufacturer (OEM) guidelines, in compliance with relevant local regulations, standards or codes by experienced and accredited installers.

In the United Kingdom:

- Installation of fire doors and shutters should be completed by a company certificated to LPCB Loss Prevention Standard **LPS 1271: Requirements for the LPCB Approval and Listing of Companies Installing Fire and Security Doors, Doorsets, Shutters and Active Smoke/Fire Barriers**. Details of installers accredited to this scheme can be found [here](#).
- Installation of fire dampers and collars should be completed by a company certificated to LPCB Loss Prevention Standard **LPS 1531: Requirements for the LPCB Approval and Listing of Companies Installing or Applying Passive Fire Protection Products**. Detail of installers accredited to this scheme can be found [here](#).
- Installers of complete fire compartmentation systems, which can include fire dampers and collars can also be accredited to LPCB Loss Prevention Standard **LPS 1500: Requirements for the LPCB Approval and Listing of Companies Installing Construction Elements Used to Provide Compartmentation in Buildings**. Details of installers accredited to this scheme can be found [here](#).

Actuation

Fire door and Shutters. Fire doors and shutters should be closed at all times where possible. If doors or shutters are to be kept open, they should only be held with devices that release them to close automatically when the fire alarm or other fire protection systems, e.g., sprinkler systems, gaseous fire suppression system in IT halls or rooms, etc., are activated. Fire doors or shutters that operate via a fusible link or other similar device should not be considered. These can fail or become damaged. Manual operation should also be possible.

Where existing fire doors or shutters utilise a fusible element, frangible or quartzoid bulb actuating device, ensure this is located on both sides of the fire compartment wall, at a high level close to the roof or ceiling deck. During a fire heat rises and collects at roof or ceiling level. Locating the device near the roof or ceiling will help ensure prompt actuation of the device. Actuation elements that are positioned away from the roof or ceiling deck will activate with a significant delay during a fire and may allow fire or smoke to pass through before the door or shutter closes.

It is essential that the area in proximity to fire doors and shutters are maintained clear of any potential obstructions. The door or shutter may not close fully if obstructed, potentially allowing fire and smoke to travel to other compartments. Fire doors and shutters, and associated fittings and guiderails, can become damaged over time. Ensure:

- At least 2-metre clearance is maintained.
- Appropriate warning signage and/or floor hatchings are put in place.
- Relevant workers are trained on the potential risks and are authorised to clear any obstructions and report any issues for investigation.
- Regular inspections are undertaken.
- Any damage is rectified promptly.

Note: Fire doors and shutters should always be closed when the building is unoccupied, e.g., overnight or over weekends, etc.

Fire dampers. Fire dampers typically operate via the operation of a fusible link installed directly to the damper. When the heat within the ducting reaches a threshold temperature, the damper automatically closes, requiring manual reset and replacement actuation components upon resetting.

Dampers can also operate automatically via a detection system or failure-of-power event in the building. These systems are suited to higher risk environments such as hospitals and high-rise buildings.

Fire collars. Fire collars activate when subjected to extreme heat (typically between 120°C and 200°C), with the intumescent material expanding and sealing the void created by the plastic pipework softening and melting. This prevents the movement of fire and smoke from the compartment. No other actuation devices are necessary.

Maintenance

Fire doors, shutters, dampers and collars should be inspected, tested and maintained in accordance with local regulations, standards or codes and OEM and/or installer guidelines.

In the United Kingdom, maintenance of fire doors and fire shutters should be completed by a company certificated to LPCB Loss Prevention Standard - **LPS 1197: Requirements for the LPCB Approval and Listing of Companies Inspecting, Repairing, and Maintaining Fire and Security Doors, Doorsets, Shutters, and Active Smoke/Fire Barriers.**

Refer [redbooklive](#) for details of approved contractors and Aviva Loss Prevention Standard **Maintenance Regimes** for further guidance.

Important: In the United Kingdom, specific regulatory guidance applies to fire door installation and maintenance for fire safety purposes. For further guidance refer to the Aviva Loss Prevention Standard **Fire Safety Legislation - United Kingdom.**

Self-Inspections

Fire doors, shutters, dampers and collars should be subject to a formal and audited self-inspection programme to ensure:

- Equipment and systems Remain suited for the application, and,
- Are not damaged, faulty or otherwise compromised.
- Smoke seals, where installed, are present and undamaged.
- Site rules and policies are being followed, e.g., maintaining fire doors and shutters clear of materials that may block and prevent full operation, etc.
- Interlocks to fire detection and/or protection equipment are functioning normally and not impaired.

Any damage should be considered as a fire protection system impairment, and such defects should be repaired as a matter of urgency.

Refer to Aviva Loss Prevention Standards **Self-Inspections** for further guidance.

Key Actions

- Undertake a material damage risk assessment before undertaking any work to evaluate the anticipated/potential material damage and business interruption losses that might follow a fire event.
- Consult your insurer or broker for guidance.
- Appoint accredited and competent persons or companies to design and install fire doors, shutters, damper or collars.
- Ensure any changes to the buildings, equipment, etc., are managed under a Management of Change process.
- Use certified products, ensuring the fire resistance ratings are commensurate with the design objectives.
- Once installed, carry out regular self-inspections for damage, faults, breaches of site rules, obstructions or materials that might impede operation.
- Ensure equipment is subject to formal maintenance arrangements in line with local regulations, standards or codes.

Checklist

A generic **Fire Doors, Shutters, Dampers and Collars 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

- [BS EN 1363-1: Fire Resistance Tests – General Requirements](#)
- [BS EN 1634-1: Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Fire resistance test for door and shutter assemblies and openable windows](#)
- [BS EN 13501-2: Fire classification of construction products and building elements – Classification using data from fire resistance and/or smoke control tests, excluding ventilation services](#)
- [LPS 1056: Issue 6.2 Requirements for the LPCB Approval and Listing of Fire Doorsets, Lift Landing Doors and Shutters](#)
- [LPS 1271: Issue 2.3 Requirements for the LPCB Approval and Listing of Companies Installing Fire or Security Doors, Door-sets, Shutters and Active Smoke/Fire Barriers](#)
- [LPS 1531: Issue 1.2 Requirements for the LPCB approval and listing of companies installing or applying passive fire protection products](#)
- [LPS 1197: Issue 4.2 Requirements for the LPCB Approval and Listing of Companies Inspecting, Repairing, and Maintaining Fire and Security Doors, Doorsets, Shutters, and Active Smoke/Fire Barriers](#)
- [BS EN 16034: Pedestrian doorsets, industrial, commercial, garage doors and openable windows. Product standard, performance characteristics. Fire resisting and/or smoke control characteristics.](#)
- [BS EN 1366-2: Fire resistance tests for service installations – Fire dampers](#)

- [BS EN 13501-3: Fire classification of construction products and building elements - Classification using data from fire resistance tests on products and elements used in building service installations: fire resisting ventilation ducts and fire dampers and/or power, control and communication cables.](#)
- [BS EN 15650: Ventilation for buildings. Fire dampers.](#)
- [BS EN 1366-3: Fire resistance tests for service installations - Penetration seals](#)

Note: Whilst UK standards and legislation are referenced in this document, other international standards and legislation should be referred to where applicable.

Additional Information

Relevant Aviva Loss Prevention Standards include:

- **Material Damage Risk Assessment**
- **Managing Change**
- **Fire Compartmentation**
- **Self-Inspections**
- **Maintenance Regimes**

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.*

*The cost of calls to 03-prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

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

Location	
Date	
Completed by (name and signature)	

	Fire Doors, Shutters, Dampers and Collars 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, shutters, dampers and collars consistent with the needs of the site? Consider: - Local regulations, standards or codes - Property values? - Business impact and interruption? - Sensitivity to smoke contamination ?		
3.	Are all fire doors, shutters, dampers and collars identified on the fire compartmentation documentation (including within ventilation and ducting systems)?		
4.	Are any third parties used appropriately accredited and certified? Consider: - Organisations used for any design, installation or maintenance activities. - Manufacturers of products and equipment.		
5.	Are all fire doors, shutters, dampers and collars (and all frames, fixtures and fittings) rated consistently with the fire resistance rating of the fire compartment wall? Consider: - Integrity? - Insulation? - Glazed elements?		
6.	Are all fire doors, shutters, dampers and collars listed with: - Their own unique identifier? - A fire resistance rating? - Any smoke protection enhancement (not applicable to collars)? - A method of automatic actuation (not applicable to collars)?		

	Fire Doors, Shutters, Dampers and Collars Checklist Contd.	Y/N	Comments
7.	For fire doors, shutters and dampers, should enhanced smoke leakage resistance be provided?		
8.	Are fire doors, shutters, dampers and collars included in regular site self-inspections by a competent person (e.g., daily or weekly housekeeping checks)?		
9.	- Are formal, documented inspections completed by a competent person: ✓ Monthly? ✓ Quarterly? - Does this include closing doors, rolling shutters down, and checking door frames, runners and tracks?		
10.	Are any fire doors or shutters actuated by a fusible element or frangible bulbs? If so, are the bulbs or fusible elements: - Located close to the roof or ceiling deck on both sides of the compartment wall? - Checked for damage, or if they've been contaminated, e.g., painted over etc		
11.	Can any fusible link or frangible bulb actuation device fitted to a fire door or shutter 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 audits and maintenance schedules completed annually? - Do they include trip tests, drop tests and actuation of automatic parts?		
13.	- Is the automatic closing operation of fire doors or shutters overridden or delayed for evacuation purposes? - If yes, could alternative means of escape routes &/or fire door configurations be introduced in order to remove the need for this delay?		
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?		

	Fire Doors, Shutters and Dampers Checklist Contd.	Y/N	Comments
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, shutters or dampers 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 or shutters 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?		
22.	Is there the potential for combustible or flammable liquids to pass under a closed fire door or shutter? Consider if: - This could be on the surface of any fire water in the event of a fire. - This is clearly identified in the risk assessment. - There are any liquid retention or flow prevention measures to prevent this from happening? - spill kits should be installed if there is a constant risk during normal working activity?		
23.	- Are conveyors or production lines passing through a fire compartment opening , e.g., wall, ceiling, etc., interlocked to shut down, and be clear of materials, before the fire shutter closes? - Is this done so that the contents on the conveyor do not block the fire shutter operation? - Is the conveyor or production line segmented to enable the fire shutter to close?		
24.	Are all normally open fire doors, shutters and dampers closed when the premises are vacated or at the end of the working day?		

	Fire Doors, Shutters and Dampers Checklist Contd.	Y/N	Comments
25.	Additional comments:		

Please Note

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