

a white paper from Keystep Solutions

Fire door safety and maintenance explained



The question of how we can prevent the spread of fires in commercial and social housing buildings has leapt to the forefront of public attention in the wake of the Grenfell Tower tragedy and the Cameron House Hotel fire.

At the time of writing, the public inquiry into the fire, which claimed the lives of an estimated 80 people, has only just started. However, debates are already raging over how regulations and rules, covering everything from sprinkler systems to external cladding on tower blocks, should be updated.

One vital piece of the 'fire prevention puzzle' is largely being overlooked, however. Fire doors are one of the most important and effective elements of a building's passive fire protection and have become common sight in hotels and shared residences, with more than three million being installed each year. Any locks and door furniture needs to be fitted correctly so as not to compromise the effectiveness of the fire door.

While current regulations demand that hotels, commercial buildings and social housing developments are fitted with fire doors, government oversight ends the very moment installation is complete. At a national level, we have no rules for the mandatory inspection and maintenance of fire doors. This is an issue, as even the most sturdy and reliable equipment can become unfit for purpose if mistreated or poorly maintained, and this includes the fire doors we rely on to stay safe.

For this reason, we believe there should be a mandatory fire door inspection and maintenance scheme.



"It is clear that the tragedy at Grenfell Tower has exposed a systemic failure of the current system of building regulation."

Lord Porter, Chairman of the Local Government Association³



Purpose and Effectiveness

Fire doors are specially designed to act as a barrier to a fire, cutting off and protecting parts of a building. This serves several purposes, including:

- Reducing the damage caused by fire and smoke
- Protecting the route of evacuation
- Providing the emergency services with a protected route to access the building
- Protecting users of a building who may have difficulty evacuating quickly

There are many vital components of fire doors that distinguish them from conventional doors, ranging from specialised smoke seals around the frame to fire-resistant glazing. Depending on requirements, a fire door can be certified to prevent the spread of fire from 30 minutes to more than four hours.

If just one of these components fails due to poor maintenance or damage, the effectiveness of the door can be severely reduced.

Fire doors are often the first line of defence in a fire, and their effectiveness can be the difference between life and death for building occupants. However, they are also one of the tools most likely to be mismanaged and badly maintained throughout their service life.

Building inspectors report that 15% of fire doors observed have damage to the door leaf, and 34% have excessive gaps between the door and its frame





Regulations, manufacturing and installation

In the UK, current guidance states that public or private shared properties should be compartmentalised – spilt into smaller spaces with barriers preventing the spread of fire and smoke. The fire doors used to help create these compartments should be able to halt a fire for at least 30 minutes, with taller or higher occupancy buildings needing doors able to endure for at least 60 minutes⁷.

Validating the performance of a fire door is a legal requirement and currently vetted at project completion, through provision of a current fire test report or independent assessment, covering all aspects of the door construction and its features.

Many fire doors, particularly timber doors, are supplied into the market and supported by Global Assessments. This requires the manufacturers of such products to construct the door in accordance with the instructions provided by the door core supplier, who originally tested the assembly.

However, the provision of a valid assessment is the only proof of correct construction, and this can be provided by the manufacturer themselves.

This has resulted in some fire door manufacturers adopting more stringent controls through an auditable third-party accreditation scheme, such as Certifire or Q-Mark. This provides additional reassurance that ongoing production of fire products conforms to the original specification.

Currently, there is no regulation governing the installation of the compliant product, which if not completed in accordance with the manufacturers' tested requirements, may jeopardise the overall performance of the installed product. Whilst a visual check may be carried out by authorities, this will not always determine the accuracy or full compliancy of the installation.



A well-built fire door can be certified to prevent the spread of fire for four hours, but this quality is useless if the door itself is incorrectly installed, badly maintained or even left open.

As with the production of fire doors, some installers or manufacturing installers, have adopted auditable third-party accreditation, such as FIRAS, to cover the installation process, thereby demonstrating competency in this field.

For this reason, we believe the UK government should adopt and enforce a mandatory requirement that all fire doors are placed in the market as completed doorsets with production, installation and certification covered by a recognised third-party accreditation scheme

Selecting Door Hardware: Risks and Recommendations

When selecting door hardware components for use on fire doors, such as door closers, locks and hinges, unfortunately the decision often comes down to price, with many buyers assuming that any fitting will be suitable for any fire door. This is simply not the case, as not all CE marked hardware for fire doors is compatible or suitable for every door type. Door material, such as timber or steel, along with door size, weight and functional performance may result in the hardware being unsuitable

To overcome this, we recommend regulations are established to ensure hardware includes simple and consistent labelling, demonstrating the type and/or limitations of fire door on which it may be used. We believe that in-depth technical knowledge should not be needed to ascertain whether a product is safe for use on a fire door, but instead, through clear visual symbols, provide reassurance to the specifier, buyer, inspector, building owner and occupant that the product is safe to use.





Regulations: After Installation

While there are rules and regulations setting out how fire doors should be certified, **unlike other EU nations there is often little to no meaningful testing once they are in place and in use in the UK.**

In all property fire inspections, there is a responsibility on the building owner to include checks on the fire doors. However, there is no legal requirement for them to complete any recommended upgrades or repairs, or to prove that they have done so. Currently no government organisation ensures that the fire inspection is carried out or that the actions are followed up.

This can represent a major problem, as doors that do not perform to the required standard could compromise a building's safety and put occupants at risk. Whilst in the event of an accident, the liability may ultimately rest with the building owner, this is little consolation to those affected.

The lack of a mandatory fire door inspection and maintenance scheme also contrasts sharply with the standardised procedures in place for many of the other fire safety systems found in shared properties, including residential.

Fire Safety Testing in Residential Flats

Equipment	Frequency of Testing
Emergency Escape Lighting	Monthly (functional test) / Annual (full test)
Fire Extinguishing Appliances	Annual
Fire Detection and Alarm Systems	Weekly (functional test) / Biannual (servicing)
Fire Mains	Biannual
Fire Doors	Biannual (with general inspection)

There is nothing in law or building regulations that says public buildings must maintain a fire door, yet it is a life-saving product.

“Proper fire doors save lives, but only if they are correctly made and installed, and certainly not if they are wedged open or in disrepair. Too often our officers walk into a building and see fire doors in an appalling state.” Paul Fuller CBE, chief fire officer of Bedfordshire Fire and Rescue Service and chairman of the Fire Sector Federation⁹.



Common Fire Door Maintenance Issues

A certified fire door will be a sturdy and reliable piece of equipment. However, poor maintenance, vandalism and even the natural shifting and settling of a building over time can cause them to become ineffective.

If a fire door leaves large gaps around the doorway, is damaged or jammed open, it completely loses its effectiveness as a fire prevention tool. Some of the most common issue include:

Gaps

Incorrect ironmongery may result in a sizeable gap underneath or around the fire door. If this is the case, it may not be able to prevent fire or smoke spreading.

Damaged door closer

Damaged door closers prevent fire doors from shutting properly, meaning it cannot adequately perform its role.

Damaged seals

If the seal around the door is no longer intact, the door may not be able to contain smoke or fire to the appropriate standard.

Damage or splits

Any damage sustained by the door could affect its performance. This can be caused by later work, as well as vandalism. For instance, fire doors often fail because a lock has been fitted incorrectly or has been put it in the wrong lock case.

Wear and tear

Building movement and wear and tear often means a change in the position of doors, leading to open gaps.

All of the above issues can be easily spotted by a qualified inspector, and then quickly corrected by qualified workmen. If neglected, they may cause fire control systems to fail, increasing the risk to both property and lives.

Propped Open Doors

Propping or wedging fire doors open negates their purpose entirely and is the most common mistake inspectors see when looking over a site. This often occurs because personnel and residents are unaware of a fire door's primary function and view them in a similar manner to regular doors.

While human behavior is not something that can be corrected as simply as maintenance, if mandatory inspections come into force they can help building owners and operators remind residents of the importance of keeping the doors shut.





What Needs to Change

We believe that to ensure a fire door is performing as it should be and determine what maintenance may need to be carried out, fire door inspections and subsequent maintenance should be legal and mandatory and policed by government, and not just down to the individual owner.

Our proposal is that:

1. In commercial and social housing buildings, fire door inspections should be carried out every six months by a qualified and validated professional.
2. Any required work should also be carried out by a qualified and validated professional.
3. Evidence to be presented every six months, showing that an inspection has taken place and that any required work has been carried out. If this is not the case, regulators should have the ability to impose fines.

These changes would bring the UK in line with many other developed nations and help to ensure that poor maintenance does not lead to life threatening consequences.

Case Study: France

France is one country that has more stringent and thorough fire door maintenance procedures in place, which help play a vital role in protecting people's lives should a fire incident occur.

Article R. 122-16 of the Construction and Housing Code states it is the building owner's responsibility to perform the necessary maintenance checks to ensure the fire doors fitted throughout a site are operating correctly. These inspections should be carried out by trained professionals, as part of an accredited and recognised maintenance contract.

All relevant staff should be aware of what these maintenance checks include and how often they need to be carried out.

Any maintenance inspections undertaken must be properly documented, detailing the safety checks performed, the findings of these and how any potential issues have been resolved. Should a building owner be unable to provide these reports, the potential consequences include insurers

being able to withdraw their cover, due to a lack of evidence that the necessary maintenance checks have taken place.



Conclusion

The current regulations and standards in place to ensure the effectiveness of fire doors fall short of where they need to be and as a consequence, lives are potentially put at risk.

Whilst the provision of certification is tightly controlled, the production and installation processes are not suitably regulated to ensure continued compliancy. Furthermore, once a fire door is installed, its integrity is undermined by the lack of testing and regulated maintenance programmes.

We recommend the introduction of:

Law to enforce that only complete fire doorsets can be placed in the market, with manufacture and certification validated through a 3rd party UKAS accredited fire certification scheme.

Law to enforce the installation of fire doors by qualified engineers, validated through a 3rd party UKAS accredited certification scheme.

Law to enforce minimum 6 monthly inspections of all fire doors in multi-occupancy properties with evidence submitted to appropriate authority that inspection and continual maintenance has been completed by a qualified independent person or company; and demonstrating that repairs/replacement cited in inspection report has been completed.

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Contact us by email sales@keystep.co.uk or visit www.keystep.co.uk

