Technishield Fire Systems you can trust

FAQs

Optima

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What does the fire resistance classification for INTEGRITY ONLY mean?



For elements of construction forming part of the compartmentation of buildings, for example, partitions and doors, the fire resistance performance is normally expressed in terms of 'integrity' with or without an additional requirement for 'insulation'.

Integrity ONLY fire resistance of a product represents its ability to resist the passage of fire and hot gasses from one side to the other for a given period of time.

Using 30 minutes as an example, a product might be classified as follows:

30/0 A partition or door with 30 minutes integrity and zero minutes insulation performance following a successful fire test to BS 476-22

E30 A partition or door with 30 minutes integrity following a successful fire test to EN 1364-1 (partition) or EN 1634-1 (door with or without side/top lights) and classification to EN 13501-2

FD30 A door providing 30 minutes integrity ONLY fire resistance following a successful fire test to BS 476-22

All of those classifications are recognised by the devolved regional guidance documents on building regulations compliance.

It should be noted that products providing integrity only fire resistance are presumed to be uninsulated, although in many cases they will incorporate elements that do provide some level of insulation. For example, many glass manufacturers produce glass that is classified according to the European classification EW. This is designed to provide a limited barrier to radiated heat so that people are able to escape past the glazing without coming to harm.

The restrictions on the use of uninsulated glazing on escape routes are well defined in the guidance documents but these restrictions do not consider the possibility of EW classified glass being used. All projects should be considered on their own merits with input from qualified fire engineers on the suitability of EW glass in these instances.



What does the fire resistance classification for INSULATION mean?





There will be parts of a building where the compartmentation will be required to provide fire resistance in terms of both 'integrity' AND 'insulation'

Insulating fire resistance of a product represents its ability to resist the passage of fire and hot gasses from one side to the other for a given period of time (integrity) and to additionally limit the temperature rise on the unexposed surface to within prescribed thresholds.

Using 60 minutes as an example, a product might be classified as follows:

60/60 A partition or door with 60 minutes integrity and 60 minutes insulation performance following a successful fire test to BS 476-22

El60 A partition or door with 60 minutes integrity and insulation following a successful fire test to EN 1364-1 (partition) or EN 1634-1 (door with or without side/top lights) and classification to EN 13501-2

FD60 A door providing 30 minutes integrity ONLY fire resistance following a successful fire test to BS 476-22

Again, these are all classifications recognised by the devolved regional guidance documents.

It is important to note, when writing or reading a door schedule, that the use of FD30 or FD60 as a door classification will be presumed to mean a door providing ONLY fire resistance in terms of integrity. If additional insulating performance is required, an additional annotation to that effect should be made.

Insulating glass is designed to progressively insulate over the course of the fire resistance period. The glass is a multi-layered laminate with intumescent layers in between the layers of glass. These react to the rising temperature by expanding to many times their original size, providing a physical barrier to the fire as well as a barrier to the passage of heat.

Should my fire doors and screens resist fire attack from both sides?





The statutory guidance in all of the UK devolved regions (e.g. Approved Document B in England) requires that all fire doors should be tested or assessed for resistance to fire attack on either side.

Approved Document B in England, and equivalent guidance in the devolved regions, is clear that all asymmetric fire doors should be tested for fire resistance opening both towards and away from the heating source. This ensures that the door can be expected to resist the passage of fire from whichever direction it comes, which is especially important when the door is installed in a compartment wall.

That is particularly relevant for asymmetric door configurations which are known to behave differently depending on their orientation. Latched doors will behave differently to unlatched doors, for example. All of the Technishield range of doors are certified for dual direction of fire.

However, there will be combinations of door systems and door hardware which have not been tested in both orientations, simply because the items of third party hardware have not been tested that way, and consequently there will be instances in buildings where it will be necessary to determine the direction of fire in order to accommodate the specified forms of door hardware.

Specifiers should always ensure that the forms of door hardware being proposed, whether electronic access control devices, door operators, feature handles and the like, are properly certified for use, either integrally or on the unexposed face, of fully glazed, steel-framed fire doors. Hardware data sheets may give the impression that the product is 'fire rated' or 'suitable for use on fire doors', but this does not necessarily cover fully glazed door systems.

All of the Technishield range of fixed steel-framed, fire rated glazing systems are fully fire tested to satisfy a dual direction of fire requirement.

Do all fire doors operate in the same way?





Single acting door with latch

Hinged doors opening in a single direction. Can be single or double leaf (incl. leaf & half). Doors will incorporate a single latch bolt on the leading edge where the leaf is up to 2500mm high and an additional top acting latch bolt on taller doors. The vertical and top edges of the leaf are typically rebated to the door frame. The bottom edge of the door may incorporate a drop seal (subject to fire resistance period)



Single acting door without latch

Hinged doors opening in a single direction. Can be single or double leaf (incl. leaf & half). Doors are unlatched, enabling prioritised free movement in circulation spaces. The vertical and top edges of the leaf are typically rebated to the door frame, while the leading edge of the leaf is nonrebated (NR). The bottom edge of the door may incorporate a drop seal (subject to fire resistance period)



Double acting door

Centrally pivoting doors opening in either direction. Can be single or double leaf (incl. leaf & half). Doors are unlatched, enabling unhindered free movement in circulation spaces. The door does not feature a drop seal at the bottom edge.

Can glazed fire doors and screens be used as an effective acoustic barrier?



Steel-framed, fully glazed fire screens and doors can be an effective form of sound barrier, depending on their configuration.

The Technishield range of systems has an extensive portfolio of laboratory sound insulation data. However, the sheer number of applications and glass combinations makes it impractical to test every possible scenario, particularly when considering the range of glass manufacturer options together with the range of fire resistance periods and glass assemblies (eg. laminates and DGUs).

Optima uses representative tests for typical screen and door applications, where the sound insulation performance of the tested glass is known, to generate a rule of thumb for the expected difference between the performance of the glass and that of the glazed screen/door in practice.

Laboratory testing in accordance with EN ISO 140-3 and EN ISO 10140-2 has demonstrated that in the majority of cases, a properly installed screen or door would not significantly underperform when compared to the manufacturers' declared ratings for the glass itself.

The effect of glazing into a screen or an operable door, having exposed framework, mullions or buttjoints, will not be more than a -2dB (Rw) reduction. In most cases this would be better.

Optima can provide details of the acoustic performance of all systems on request, including estimated composite values for doors and fixed glazing in a combined application.



Can I choose my own door hardware or electronic access control devices for my steel-framed, fully glazed fire doors?





Mag lock or solenoid lock?

Manual operation or power assist?

Lever handles or pull handles Steel-framed, fully glazed doors are fire tested as a system, with standardised door hardware (hinges, latches, movement restrictors, seals, etc). The tested hardware will be specifically referenced in the fire test report and if supported by an extended application report, may have specific alternative hardware options. If supported by a field of application assessment, specific hardware alternatives may also be specified.

No other possibility for alternative hardware, where it directly affects the door's function in a fire, exists within the standards for fire testing and certification of fire doors unless representative fire testing has taken place to demonstrate the suitability of the hardware item on a steel-framed, fully glazed fire door.

A fire test of an item of hardware on an alternative door type (eg. timber, composite or steel) does not automatically confer suitability on a steel-framed, fully glazed door.

Door hardware is often advertised, frequently on product data sheets and on websites, as being "fire rated" or "suitable for use on fire doors" or "tested to BS EN 1634-1".

None of these is descriptive and cannot be taken to mean that they are suitable for use on steel-framed, fully glazed fire doors.

A maglock advertised as "fire tested" to EN 1634-1 up to 60 minutes, which has indeed been fire tested by Warrington Fire. What the data sheets don't say is that this evidence is only applicable to timber fire doors.

Even hardware items as seemingly innocuous as handles are subject to well defined rules in the fire test standards on whether they are suitable for use on fire doors. Typically this will require fire test evidence on the specific fire door type. I have to allow for structural deflection. How can this be accommodated in a steel-framed, fully glazed fire door or screen?



It is possible to incorporate deflection heads with fire rated doors and fixed glazing as long as the deflection head itself has been fire tested or been assessed by a competent authority.

Where the deflection head is being used with a door or screen which has an insulating (El classified) performance, the deflection head itself must also be capable of providing the specified level of thermal insulation.

Typically, deflection heads can only be used where the fixed glazing is modular, with each pane of glass being fully framed. This is because the framework around the glass is well tied and is not affected by the possibility of thermal distortion into the empty deflection head.

This is not the case with butt-jointed screens as the glazing system would typically only have up to 15mm of engagement with the top edge of the glass.

Even where the system has increased top edge engagement, a fire test of a screen in standard 3m or even 4m wide furnaces would not necessarily give a representative outcome of a screen that was much wider.

The greater the width, the greater the potential for thermal distortion and therefore, integrity failure.



How can I achieve a Building Regulations requirement for fire doors that resist the passage of smoke at ambient temperature?



To satisfy the requirement for door resisting the passage of smoke at ambient temperature, they must have been tested at 25Pa to either BS 476-31.1 or BS EN 1634-3 and have achieved a maximum leakage rate of $3m^3/m/hour$.

When tested according to BS 476-31.1 and having satisfied the leakage requirement, a fire door may be designated FD30 (S) provided that it also complies with the requirements of BS 8214. This specifies that a fire door which is required to resist the passage of smoke at ambient temperature should have an effective threshold seal and where this is not possible, that the clearance gap to the underside of the door is reduced to \leq 3mm.

When tested to BS EN 1634-3, the same requirement to comply with BS 8214 applies and the door may be classified with the suffix $\rm S_a.$

All of the Optima Technishield range of steel-framed, fully glazed fire doors has been tested in accordance with BS EN 1634-3 and achieve the S_a criteria. It should be noted that the Technishield Pulse door, being double acting, cannot have an effective threshold seal fitted and the minimum threshold clearance requirement should be applied.



For more information about which systems fit your specification see the table below or contact our experts for advice: **action@optimasystems.com**

	Fire resistance period (mins.) for integrity/insulation								
	Shoreditch	30/0	30/30	60/0	60/60	90/0	90/90	120/0	120/120
Technishield 25 - screen	•	•							
Technishield 50 - screen	•	•		•		•		•	
Technishield 50 - door	•	•		•		•		•	
Technishield 54 - screen	•	•							
Technishield 65 - screen	•		•		•				
Technishield 65 - door	•		•		•				
Technishield 70 - screen	•						•		
Technishield 70 - door	•						•		
Technishield 110 - screen	•								•
Technishield Facade		•	•	•	•	•	•	•	

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