

WHITEPAPER

BS 8214 explained



What is BS 8214 and what does it cover?

In this whitepaper, we wanted to give a practical interpretation of what BS 8214 means for the correct installation of fire doors. But before we dive into the detail, let's just remind ourselves of what BS 8214 sets out to do. The purpose of BS 8214 is addressed in its very first section. It says:

“ This British Standard gives recommendations for the specification, installation and maintenance of timber-based fire doors. The recommendations are applicable to timber-based hinged or pivoted pedestrian door assemblies or door leaves, fitted into frames of any material ”

It also relates specifically to fire doors designed to provide fire resistance ratings of up to and including two hours, as typically found in residential settings.

It was first introduced in 1990 to complement regulations on the construction of fire doors, in recognition that protection against fire could be achieved only if such doors were also installed in the correct way. The standard has been updated over the years – we are currently governed by the third edition, issued in 2016.

This predates the Grenfell Tower tragedy, the inquiry into which is still ongoing; its Phase 2 report, still being researched and compiled, may well include further modifications to the standard.



All Solidcor doors have a solid timber core, so the doors are classed as a timber-based door even though they are faced with u-PVC skin for ease of maintenance.

A comprehensive set of criteria

Each of the tests described – for fire, smoke and intruder resistance – relate to one aspect of a door's performance. But we surely all want any fire-resistant door to be equally good at combating smoke and burglars as well? We therefore strongly believe that triple certification should be considered essential if a doorset is to deliver the best possible all-round safety for building occupants.

As we have seen, the Secured by Design scheme has been a driving force towards triple certification. Such is the prestige of the SBD scheme that triple certification is likely to become the norm and, sometime in the near future, a legal requirement. We'll end this article as we started, with a quote from their same article:

Does BS 8214 say anything about the testing of fire doors?

BS 8214 is concerned with the safe installation of fire doors, not with their testing. However, BS 8214 relies on other standards which are concerned with testing to specify which doors, and other parts of door assemblies, must be used. It says:

“ The building designer should ensure that all fire doors to be used are of a design that has been tested or subjected to assessment for the required fire resistance period, and that documentary evidence exists to that effect. ”

BS 8214 specifically references the following standards in setting out the quality of the products and fittings that must be used:

BS 476, the UK-only test which covers how fire tests on building materials and structures must be conducted and what constitutes a pass of such tests.

BS EN 1634, the European alternative to **BS 476**, which is concerned, amongst other things, with the fire resistance and smoke control tests for door assemblies.

BS EN 179 and **1125**, which cover the testing and required standards of building hardware used on building escape routes, such as devices operated by a lever handle or push pad.

BS EN 1366-4, which covers the testing and required standards of fire dampers, including seals.

BS EN 13637, which sets out the requirements and test methods for electrically controlled exit systems for use on escape routes.

Users of BS 8214 are advised to consider the desirability of sourcing fire doors from a manufacturer that operates as a **member of a third-party certification scheme**, as such schemes are designed to ensure **consistency of product conformity**.

Of these, BS 476, BS EN 1634 and BS EN 1366 are the key testing standards around doors that are referenced by BS 8214.

Compliance with BS 8214 is therefore dependent on products being used that have passed the testing standards that are relevant to them. Having specified the standard of products to be used, BS 8214 then goes on to explain how they must be installed to achieve the desired protection against the effects of fire. It also recommends, to ensure that installations come up to scratch, that products are sourced from accredited suppliers.

“ Users of BS 8214 are advised to consider the desirability of sourcing fire doors from a manufacturer that operates as a member of a third-party certification scheme, as such schemes are designed to ensure consistency of product conformity. ”

Note that BS 8214 is concerned only with the fire and smoke resistance that is delivered by correct parts specification and installation; other aspects of door assemblies, such as their security against unlawful entry, are not considered.

Why might door installations fail to meet the BS 8214 standard?

BS 8214 is very clear in the requirements for an approved fire door installation, so failing to achieve this standard is usually as a result of not having checked them! The following examples show where some installations fall foul.

Mind the gaps

Gaps around and within door assemblies represent potential weak points in their capacity to counter fire and smoke, so they are given detailed consideration by BS 8214.

First, there is the issue of gaps around the edge of the assembly. Ideally, the assembly should fit as snugly as possible into the building fabric. The size of gaps between doorset and wall, and how they should be filled, are both specified. If the cut-out opening for the door results in the gaps being too large to fill, add-ons or extension pieces should be used to expand the size of the doorset. If inadequate sized extension pieces are used, the gaps will still be too large, and so the installation will remain non-compliant.

Then there are the gaps between the door panel and door frame. Although such gaps are essential to allow the door to open and close smoothly, BS 8214 suggests they should be between 2mm and 4mm to achieve effective fire-resistant performance. It acknowledges that some smoke seals might require a larger gap to operate without causing significant frictional increases, but says "the gap should remain within tolerances approved for the fire resistance performance".

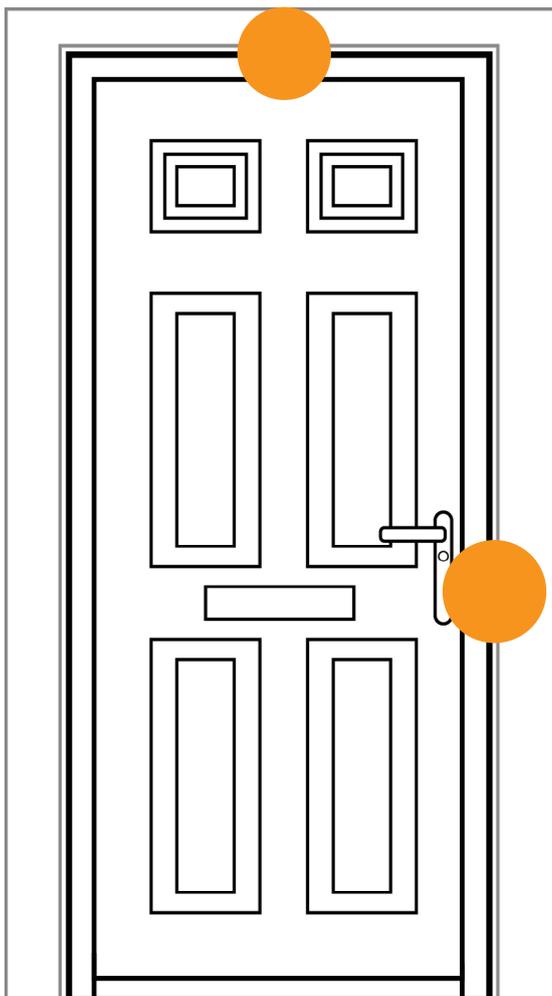
Although gaps within the assembly will have been assessed during testing of that particular set-up, fire security can still be compromised if the door is fitted incorrectly. BS 8214 requires that:

“ Doors should be hung to give an equal gap across the head, down both jambs and at meeting edges and states that under-door (threshold) gaps for fire resistance should be in accordance with the fire door manufacturer's installation instructions for the particular design ”

Failure to achieve these requirements will lead to a door installation not meeting the standard.

Add-ons (the term used in the timber door world) or extension pieces (the equivalent term in the composite door world) are lengths of fire-retardant material that match the material in the door frame itself – timber or PVC – that can be fixed to the frame before the assembly is fitted into the opening.

- Doors should be hung with an equal gap across the head and down both jambs.



Filling the gaps

BS 8214 permits the use of expanding foams to fill gaps in certain situations. Some believe that fire resistant foams come in a pink colour, but in fact, there are some blue variants that are equally fire resistant. The important thing is to check the product specification and ensure it has been successfully tested in accordance with BS 476-20 or BS EN 1366-4 for a minimum of 30 minutes fire resistance.

In fact, any product being considered for use in a fire door installation – whether it is the door itself, a fixing, or a sealant – needs to meet any test standard for that product set by BS 8214. If it does, you can use it; if it doesn't, don't!

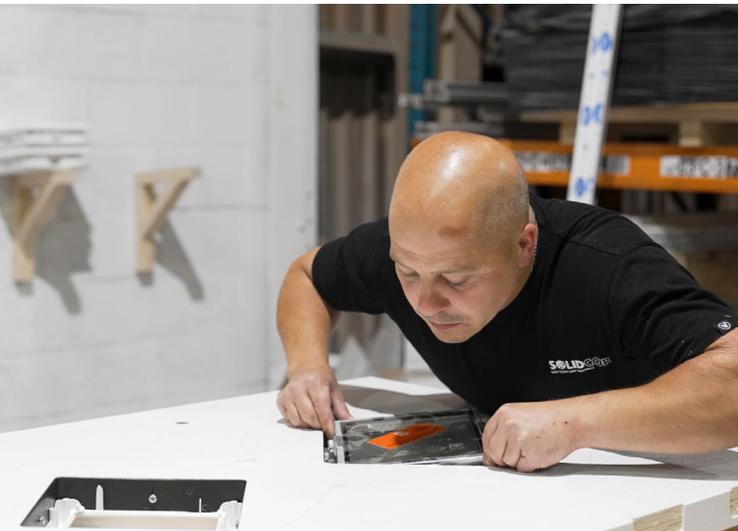


Apertures

Door apertures will typically be used to accommodate glazing, or for fittings like letterboxes. Although BS 8214 does not actually prohibit apertures being cut on site by installers, it is strongly against the practice. It says any cutting must be done by "a competent person in accordance with the test evidence and the manufacturer's recommendations".

It is clear that where apertures are needed, best practice is that they should be cut and glazed or fitted with hardware by the manufacturer, prior to delivery and in a form where the whole assembly has been tested and approved.

In practice, though, glazing in doors can be broken on site. In this circumstance, BS 8214 allows reglazing there as long as the manufacturer is consulted, the replacement glazing matches the original specification, and – again – the work is carried out by a competent person.



The door assembly is fire-resistant, but is the wall?

There is no point installing a high-performance fire door within a partition that does not have fire resistant capabilities! This crucial point is acknowledged in BS 5218, which says:

"The main supporting structure for the door assembly, including any part of the reveal left unprotected by the frame, should be subject to a fire resistance test and should be shown to be capable of:

- a) effectively supporting the proposed door assembly construction for the required fire resistance period; and
- b) mechanically supporting the door assembly in the cold state."

For a fire door to fulfil its stated fire resistance, it must be installed within a surround wall/partition that is in accordance with the manufacturer's field of application. In other words, it has been tested and passed for use in that situation.

The installer's bible

BS 8214 is such a crucial document in defining the safe installation of fire door assemblies that we would recommend all installers to obtain a copy. Quite apart from its value as a reference point for keeping within the rules, the information it provides makes it a useful basis for the training of anyone engaged in the installation of fire doors.



Rest assured that all Solidcor doors are manufactured to industry standards – we think anyone whose home has a Solidcor door deserves that assurance.

Our industry leading commitment

Every Solidcor door is delivered within just 10 days of being ordered, and arrives to site ready to fit, with no further finishing required.

Find out more – contact sales@solidcor.co.uk