

WHITEPAPER

# Why is Triple Certification of fire doors important?



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The above quote reflects a growing trend for doorsets to be tested in the three ways described: to assess their ability to withstand fire and smoke, as well as security against illegal entry. Specific testing for smoke ingress is the additional element that turns 'dual certification' into 'triple certification'. It has come about in recognition, especially in the wake of the Grenfell tragedy, that the greatest risk to human life in fires comes about through the effects of smoke inhalation rather than from being directly exposed to heat and flames.

Since 1st June 2022, Secured By Design now requires all SBD listed fire-rated doors to be tested for smoke permeability to the same standards as the dual certification of fire and security. Therefore, SBD 'dual certification' now involves triple testing: security, fire – and smoke.



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In the year ending March 2022, the most common cause of death for fire-related fatalities (where the cause of death was known) was "overcome by **gas or smoke**".

National statistics, 29 September 2022







## Test 1 Fire testing

Regulations under the Regulatory Reform (Fire Safety) Order 2005 require that fire doors must have been tested to a recognised standard by an independent UKAS-approved body. The standards that apply are BS 476 in the UK market only or BS EN 1634, which is valid both in the UK and across the European Union. (However, the Government has announced that it intends to repeal the BS476 standard so that BS EN 1634 will be the only standard.) If a door passes the test, it will be given a rating comprising the letters FD (for 'fire door') followed by a number representing that the door is certified to withstand fire for 30, 60, 90 or 120 minutes. Typical fire doors will have an FD30 or FD60 rating.

The test itself involves subjecting doors to the procedure set in BS 476 or BS EN 1634. The doorset is subjected to fire on one side at a high temperature – in the range of 1,000 to 1,300°C – and the time it takes for the fire to spread to the other side is measured, as determined by when flames have been present on the non-fire side for ten seconds or the temperature on the non-fire side of the door exceeds certain levels. To aid measurement, a combustible fibrous pad is mounted on the unexposed side of the door to see how much time elapses before it ignites. The test is repeated on an identical doorset with the opposite side exposed to fire, to check that the door performs equally well from both directions (known as bi-directional testing).

The test and the resulting rating are both based on complete doorsets, including the hinges, handles and other hardware, not just the door panel.

Tests determining if doors pass or fail fire, smoke and security standards must be carried out by **independent bodies** approved by UKAS (the United Kingdom Accreditation Service). This degree of independence and oversight ensures **standards are upheld** and maintains the credibility of the testing system.



## Test 2 Smoke testing

Smoke testing must be conducted in accordance with BS EN 1634-3 or BS 476-31.1 in the UK-only market. A smoke test doesn't involve actual smoke during the test. Instead, the testing requires a doorset to be placed in a sealed chamber pressurised to 25Pa ('Pa' stands for 'pascal', the standard international unit for measuring pressure). Pressurised air is introduced on one side of the door and the amount that leaks through to the other side is measured. If the leakage is less than 3m<sup>3</sup>/h/m (three cubic metres per hour for each linear metre of door edge), the door passes. A doorset can either pass or fail the test – there are no other degrees of effectiveness, such as 'exceptional pass' or 'narrow fail'.

Where a door is rated for smoke resistance, it has an 'S' suffix (if smoke tested under BS 476-33) or an 'Sa' suffix (under BS EN 1634-3) to the normal fire door code. So, for example, an FD 30 fire door becomes an FD 30S or FD 30Sa.

Building regulations currently state that any new front door to a flat must be smoke sealed to a standard that passes the test as described. Given that the perils from smoke are at least as severe as other aspects of fires, many – including Secured by Design and Solidcor – think that all fire doors should protect people from smoke ingress, as well as against flames and heat.

Some have highlighted two flaws with the conditions under which smoke testing is performed.

First, the test is carried out with any gap between the bottom edge of the door leaf and the floor or threshold sealed with tape. This is to enable a constant air pressure to be maintained during the test, but, of course, it does not reflect how doors exist in the real world, complete with gaps. Although there are stipulations as to what measures should be taken to cover gaps for doors in actual use, the taping up during the test is seen by many to affect the validity of the test results.

Second, the standard applying to timber doorsets, BS 8214, allows for a 3mm gap at the threshold to remain in real-world situations where fitting a threshold seal is not practicable. Only where the gap is greater than this must a seal be fitted, but this permitted gap could have serious consequences in a real-world fire. As Secured by Design puts it:

“ It is the opinion of SBD that neither [of the two test conditions described above] are acceptable in a ‘real-world’ fire scenario... Taping up the threshold proves nothing when the doorset is exposed to smoke in an apartment block and could therefore lead to smoke unnecessarily entering an area designed to be a safe haven. The 3 mm gap allowance has been **independently proven** to allow smoke leakage of up to 10.5m<sup>3</sup>/h/m – **three times the allowance** of 3m<sup>3</sup>/h/m in the current Building Regulations. ”



### Test 3 Security testing

PAS 24:2016 is the UK standard relating to the security performance of windows and doors.

Although fire doors do not by law have to be tested under PAS 24, many landlords, councils and architects specify that the entrance doors used in their buildings must have passed this standard. In addition, PAS 24 has also long been a requirement for doors wishing to receive Secured by Design approval. There is thus a general expectation that doors will have passed PAS 24.

The test sees doors subjected to the type of attack that burglars might make, and the result is either a pass or a fail. As with the fire and smoke tests, they are valid only if conducted by a UKAS-approved body.



Secured by Design (SBD) is a police initiative originally set up with the aim of reducing crime by improving the physical security of buildings. Since then, the SBD scheme has evolved to look at a broad range of products relating to public safety and security, including fire doors. When buyers see the ‘Secured by Design’ logo on a product, it acts as a trust mark, providing reassurance that the product will deliver a high quality of protection.



# Triple certification

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:

“ We are adamant that any doorset that carries SBD accreditation should be fit for purpose in all declared characteristics, but especially those that are life critical such as fire, security and smoke control. We are committed to saving lives and making homes safer places in which to live, work and play. ”

**All Solidcor doors are triple certified – we think anyone whose home has a Solidcor door deserves that assurance.**

And on top of that, every Solidcor door is delivered within 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](mailto:sales@solidcor.co.uk)