Quick Guide to the Certification of Timber Fire Doors

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1. Specification

The Role of a specifier

When a building project is started the person responsible for producing the drawings usually the architect has to considered the fire safety aspect of his design to conform with the Building Regulations and his clients wishes, who in the case of a non domestic premises could be the Responsible Person. This person could be described as a specifier.

The role of a specifier is critical in the life of a fire door. A specifier role, being at the beginning of the project, is an opportunity not only to identify where a fire door is required and what its rating needs to be, but to set the standard by insisting on a certificated product.

A specifier has the opportunity to look at the fire safety of a building as a whole, and as such, make decisions on what fire safety products are required to ensure the safety of the occupants in the event of a fire. While product costs are always a consideration, decisions on the quality of a product should be made with safety in mind. If you leave the decision of fire door quality to someone further down the process, are they going to make the decision based on what is the safest option or will it be based on what is the cheapest option? The specifier has the opportunity to avoid this scenario by insisting on a third party certificated product at the design stage.

Availability

Most door manufacturers are members of the British Woodworking Federation(BWF) or BM TRADA and both have a third party certification scheme. The BWF scheme is called BWF-Certifire and BM TRADA is Q-Mark Certification and these schemes gives assurance that fire doors meet the required standard. The remainder can have their fire doors tested by an approved fire testing centre and would have a copy of the fire test certificate/report/data sheet to prove the fire doors meet the required standard.

With the third party certification scheme's representing both volume manufacturers and manufacturers of bespoke and made to measure fire doors, there is a certificated option available for every situation at competitive prices. This shows that there is no reason not to specify third party certificated fire doors.

Design

Fire doors are now available to suit all your design requirements from heritage buildings to ultra modern settings. The designs available include various timber finishes, glazing options, sizes and even stable doors. Security issues have also been addressed with certificated fire doors available with multi - point locking systems, and alarm release locking systems. Refer to the associations websites for a listing of third party certificated manufacturers of fire doors and their components.

Failure to specify the correct rating, positioning or a third party certificated fire door could not only cost lives and property but could also see the specifier held partly responsible for the consequences of the fire.

Building Regulations

Building regulations identify the need for fire safety in the design of all buildings. Building regulations are made up of parts, with the associated approved documents providing guidance as to how to achieve the requirements. Fire doors are affected by a number of parts of the building regulations but the principle guidance is contained in part B fire safety.

2. Certification

Certification is the cornerstone of third party certification schemes and should be the minimum requirement demanded for every passive fire protection product. In the event of a fire, passive fire protection products have a critical role to play in saving lives and property so certificated products should be used. Third party certification tests, verifies a fire door's design, performance, manufacturing process and quality assurance from manufacture to installation.

Testing

Testing a fire door as an assembly is the only sure way to prove that it is going to fulfill its rating and along with auditing, is the basis for third party certification. Fire doors are currently tested to BS 476 part 22 or BS EN 1634-1: 2000, which requires the test to be done as a complete assembly including door leaf, frame, ironmongery, intumescent seals and glazing. A rating is then given to the door assembly based on the time it has held back the fire without being breeched. The schemes requires each fire door design to be tested at suitable intervals, to ensure standards are maintained. When these tests are carried out, a fire door is randomly selected to ensure that each fire door made under a certificate number is made to the same, high standards as the original test specimen.

Following the test the UKAS approved certification body produces a certificate and data sheet which clearly identifies the scope for adjustment and the specific component that must be used with the door leaf. If any component is used that is not allowed by the data sheet, the whole door assembly loses its certification. To help the installer maintain the certification all scheme members then use the information contained in the data sheet to produce a detailed installation instruction document that is attached to every fire door.

Auditing

All third party certification members involved in the manufacture of fire doors and frames and licensed converters that make up doorsets and add glazing to a fire door are required to undergo regular audits. The audit aims to ensure that fire doors being made and adjusted use the same materials identified in the original test for that specific design. The auditor will also look to ensure that the certificated fire door & doorset scheme labels or plugs and installation instructions are being attached to every door.

BWF have a scheme called Approved Fire Door Centres (AFDC) and they also required to undergo yearly audits to ensure they stock the correct components for the doors they supply. The auditor will also question the trained sales staff to ensure they are giving the correct advice to their customers.

IS09000

Certification is more than just the testing and auditing however. The IS09000 quality management system is also a requirement of the Scheme to ensure that standards are maintained for every door manufactured. With audits only occurring about once per year, IS09000 requires that procedures are put in place to ensure products are made in the correct

way with all the correct materials. The IS09000 system is also audited each year by a UKAS approved auditor to ensure the procedures are being implemented.

3. Manufacturing

Manufacturing requirements

When manufacturers join a Scheme they are required to follow a set of strict rules that ensure a consistent quality of fire doors. These rules include a regular testing schedule, which requires a significant time and financial commitment, proving their dedication to providing a high quality safety product.

The schemes requires members who manufacture fire doors to have all fire door designs tested and certificated to give the consumer confidence in the use of their products. This ensures that all fire doors manufactured will achieve their ratings if the installation instructions are followed.

Installation instructions are put together by the manufacturer based on the scope allowed in the fire test data sheet. A copy of the installation instructions should be attached to every fire door manufactured and clearly explains the installation process and components that can be used with the door leaf. If any part of the installation instructions is not followed the whole door assembly loses its certification.

Every fire door manufacturer that is third party certificated has a identification marker fixed to the door leaf. In the case of a BWF a label which identifies the fire door rating, manufacturers name, contact phone number, certification number and a unique serial number. This gives the fire door traceability through the supply chain and provides all contact details required to check any technical details with the manufacturer. The BM TRADA Q-Mark Certification uses plastic plugs to identify the fire door and is located on the stile just below the top hinge. The label or plugs should never be removed or covered.

Fire door construction & Finishes

Gone are the days when fire doors are only available in solid timber construction that are heavy to open and stand out like a sore thumb. Prime fire door manufacturers now produce fire doors using safer, cost effective materials sourced from sustainable resources that are available in a variety of finishes to suit all building designs.

While solid timber fire doors are still available, flax board and wood composite door cores are the basis of a majority of fire doors manufactured. These materials have the advantages of reducing the weight and cost of a fire door while still burning at a slow consistent rate.

Moulded skins and laminates are the products used to cover the door core to suit the design of the building. These products have significantly increased the variety of finish you can now get on a fire door to suit all locations from heritage buildings to ultra modern settings.

4. Converters

Licensed Converters are joinery companies who generally do not manufacture fire doors but are involved in altering doors and making frames and doorsets. These companies are licensed by the prime fire door manufacturers to make alterations to their certificated fire doors within the scope of the data sheet.

Licensed converters playa critical role within the fire door supply fulfilling a role that is often uneconomical for the volume fire door manufacturers. They are able to provide bespoke and made to measure fire doors for both large and small jobs. Concentrating on this type of work allows the licensed converters to offer shorter turn around times than volume manufacturers on made to order designs.

The Licensing Process

The prime fire door manufacturer provides all the relevant data sheets and specific product training required to maintain the certification of the fire doors. The licensed converter then implements IS09000 to ensure the correct procedures are in place and are audited by a UKAS accredited certification body to ensure the work is being done within the scope of the data sheets. Based on a successful audit the company is then given certification to allow them to work on a specific fire door manufacturer's doors. Audits are then carried out to maintain the certification. A Converter may be licensed to more than one manufacturer.

Fire Door Frames

Fire door frames are as important as any other component in a fire door assembly and therefore must be made to replicate what was used in the original fire test. A data sheet will identify the specific timber type and density that must be followed for the certification of the door assembly to remain valid. The dimensions of the frame are also critical to allow the correct sized screws to be used with the door hinge without going through the back of the frame.

The only way to ensure your frame fulfils the requirements of the fire test data sheet is to purchase it directly from the manufacturer or one of their licensed converters.

Glazed Apertures

Cutting an aperture in a fire door creates a weak point that is the most likely point of failure if not done properly. A fire test data sheet will identify the maximum area of aperture allowed on a specific door, which includes glazing, letter plates, air vents and spy holes. Glazed apertures are often required in fire doors to fulfill the requirements of Part M of the building regulations and with the range of fire rated glass available can add to the aesthetics of the fire door.

When putting glazing into a fire door, it in vital to use an approved intumescent glazing system and fire rated glass as well as hardwood beads. It is also important to note that not all glasses can be used with all intumescent glazing systems so it is vital that a licensed converter installs the glazing and seals with reference to the data sheet. When pinning or screwing the beads it is important to do so at the correct angle to ensure if the beads burn away, the pins/screws will still hold the glass and seals in place.

Doorsets

Doorsets, put together by the door leaf manufacturer or a licensed converter, are by far the best solution. A doorset involves the door leaf being pre-hung in its frame in factory conditions with all the correct compatible components including glazing, ironmongery and intumescent seals. Using a licensed converter with the correct training and information is the best way to ensure that your fire doorset will be made according to the scope of the data sheet and maintain its certification.

Fitting a component of incorrect size or material that was not specifically designed to be used on a fire door could significantly affect the performance of a fire door assembly. Components identified in the data sheets and installation instructions must be used to maintain the certification of the whole door assembly.

5. Components

Essential Ironmongery

The role of essential ironmongery is to hold the fire door in place in the event of a fire. Door closers, hinges, locks and latches are all considered essential ironmongery and must therefore be made of a metal that has a melting point above 850 degrees Celsius such as steel, phosphor bronze and brass.

There is now a variety of tested and certificated door closers available to fit all of your design requirements. Concealed over head and jamb mounted closers are now used on fire doors where you don't want the closer visible when the door is in the closed position, for example in heritage buildings. Also certificated floor springs are now readily available and used in double leaf configurations. If hold open devises are used, they must be inline with the closer to ensure the door does not distort and only used if linked directly to a fire warning system.

While CE marking is not yet mandatory on hinges and locks & latches the Construction Products Regulations require that these products are fit for purpose. CE marking will prove that the product has been tested and is fit for purpose which must be the minimum standard demanded for hinges, locks and latches used on fire doors.

Non-essential Ironmongery

Products that are considered non-essential ironmongery, including handles, letter plates and air transfer vents, do not have a direct role in holding the door in place but can still have a significant affect on the fire door achieving its rating. It is critical that non-essential ironmongery is chosen and installed as per the door leaf installation instructions which may require intumescent sleeves or paste being used.

Intumescent, smoke and acoustic seals

An intumescent seal must be used on every fire door and can be placed in the door edge or preferably the door frame. The minimum recommendation on a FD30 fire door is now a 15mm x 4mm seal, that will expand to fill the 3mm gap allowed between the door leaf and frame in the event of a fire. Where higher fire ratings are required, refer to the door leaf installation instructions.

Smoke seals are available in a brush or fin design and can be combined with intumescent, and acoustic seals or used separately. The need for smoke seals is set out in the relevant national fire safety guidance documents and is a critical safety device considering the danger that cold smoke poses to human life.

Fire rated glass

Fire rated glass is made in wired and clear designs and available in a variety of colours and thickness. Fire rated glass must be installed in conjunction with an intumescent glazing system and hardwood beads. Not all fire rated glasses work correctly with all intumescent glazing systems, so it is important to check the data sheet for the specific products. Apertures should always be cut in a factory environment and the glass installed by an appropriately licensed company.

The fire rated glass must also have a safety rating when fitted into a fire door, where it is within 1500mm, from the finished floor level and the aperture exceeds 250mm in its smallest dimension, as in accordance with Approved Document M.

6. Buying

Doorset are generally the best way of buying a fire door, as they are made in a factory condition by someone who understands the product. This will ensure that the components used are compatible with the door leaf and the instructions in the data sheet being adhered to. This means that all that needs to be done on site is the frame be properly secured to the wall, saving time and therefore installation costs.

If you can't get a doorset, then door kits are now available, providing all the compatible components in kit form for installation on site. If you have to buy the components separately then make sure you go to a supplier who understands the problems associated with fire doors and who will have all of the compatible components required.

It is important to note that not all doors can be used in all configurations. Check the installation instructions attached to the door to see if it has been tested to be used in double leaf and double acting configurations.

Approved Fire Door Centres

The British Woodworking Federation have a scheme they call Approved Fire Door Centres (AFDC) and because builders merchants account for over 75% of fire doors sold in the UK, consequently are a significant player in the fire door supply chain. Builders merchants, by nature, sell a variety of products and their staff are trained to have a basic understanding of them all. Selling a fire door with the incorrect components or offering incorrect advice could cost people lives so it is critical that the sales staff of builders merchants have the correct training and components for the doors they sell.

The Scheme has sought to rectify this problem by offering a training service to builders merchants through its AFDC scheme. Sales staff of all AFDC's are required to undergo initial training and testing in the key concepts of fire doors and then take regular refresher training. The training assists the staff to provide correct advice to their customers to ensure the correct, compatible components are sold with a fire door. This will make sure the builders merchant maximizes its sales opportunity and the customer has all the correct components to ensure the certification of the door is maintained.
The other key requirement for a AFDC it that they stock all of the compatible components that need to be sold with the fire doors they stock. Therefore AFDC become a one stop shop for all your fire door needs. All AFDC are audited on a yearly basis to ensure this is maintained. For more information go to the BWF website.

The role of a Building Contractors

Building contractors always feel the pressure to bring a job in, not only on budget but preferably under budget to save their customer some money however life saving products, including fire doors are not the right place to look for cost savings. Choosing cheaper untested products may save you customer some money, but if a fire breaks out it will cost them far more in lives and property.

By providing installation instructions with the fire door, the manufacturer is advising you of the procedure for installation and the components that must be purchased and used to maintain the certification. If you choose not to follow these instructions and use components

against the advice of the manufacturer you could be held responsible if lives or property are lost.

When a fire door is specified, often only the position and rating or the fire door are included, leaving no clear requirement for a third party certificated product. In this case you have a choice, either buy the cheapest option available or take the responsibility for ensuring the safety of the occupants and insist on certification.

7. Installation

The installation of a fire door is a complex procedure requiring a detailed understanding of the important role each component and therefore requires a competent person with the correct training.

Doorsets are clearly the best option as they are put together in a factory condition by someone who understands the importance of using compatible components and allowing a consistent 3mm gap between the door leaf and frame. If however the components need to be sourced individually, it is vital that the installations are followed. Failure to follow the installations exactly will result in the fire door losing its certification.

Firas

Installation of fire doors is one of the most important roles in the fire door supply chain and the role that is least monitored. While manufactures, licensed converters and component supplies undergo regular testing and auditing, installers go largely unchecked. The Firas Scheme, run by Bodycote Warrington Fire aims to solve this problem by providing training and certification for fire door installers.

Supported by the bwf-Certifire fire door & doorset scheme, Firas provides certification to a company through regular onsite assessment of their work. Firas allows its certified members to produce certificates for each individual job by logging the details of each job into the Firas website leaving a complete record of the jobs undertaken. Using a Firas member to install your fire doors will ensure the certification of the complete fire door assembly is maintained.

For further information on companies certified by Firas to install fire doors, go to www.warringtofire.co.uk or phone 01924 646 777.

Installation Instructions

Installation instructions are put together by the schemes fire door manufacturers based on the fire test data sheet and attached to every fire door. The installation instructions guide the installer to replicate the door assembly used in the original test by clearly identifying the components and materials allowed. Trimming details, required gaps and maintenance are other important issues clarified in the installation instructions. The Scheme encourages its members to use picture based instructions to overcome any language barrier that be present.

Frame to wall gap

Where possible the frame to wall gap should be limited to 10mm, but some fire doors will allow up to 50mm if identified in the installation instructions. The gap should be filled with a material fibre or intumescent foam to ensure flames cannot penetrate.

Trimming Allowance

Trimming allowances will be clearly identified in the installation instructions but as a general rule are limited to 5mm off the bottom and 3mm off the stiles. Taking more off the door may affect the structure of the door reducing the expected performance. Never trim the top of a

Certifire door due to the positioning of the identification label. If it is destroyed or removed you need to contact the manufacturer for a replacement.

8. Checking Fire Doors

The role of Building control

If a fire door is installed without the correct components and the correct gaps it might as well just be a standard door. The role of signing off the fire safety of a building must therefore include a detailed assessment of each fire door installed, not just a quick check that a fire door leaf has been used. The only way to be sure that a fire door will work is if the fire door assembly as described in the original test report is replicated. By allowing untested products or incorrectly sized products to be used, you are taking a gamble that the fire door will work, and therefore a gamble with peoples lives.

Checking the certification of a fire door

The first thing to check when assessing a fire door, is whether the assembly has been certificated. The bwf-Certifire fire door & doorset scheme, for example, produces a label that identifies the manufacturer, certification number and rating and is located on the top edge of the door leaf or in the case of a doorset by the lower hinge. The bm trada -Q-mark Certification uses plastic plugs inserted on the upper part of the hinge stile. Once you are sure that the door leaf you are checking is certificated, it is important to check that the components used are compatible. The best way to check this is to use the installation instructions attached to each door manufactured by scheme members. If this is not available then contact the manufacturer for advice. Both the data sheet and installation instructions will list the components, including door frame, that can be used with the particular door leaf.

Secondly check that the door leaf has only been amended by licensed converters within the allowances of the data sheet. Any aperture cut in a fire door for glazing, letter plates and air transfer grilles represents a weak point, therefore only trained and certificated companies should undertake the work, using certificated products. If a licensed converter has made these adjustments they will place a label on the top edge of the door leaf. The allowance of glazing and the maximum area of apertures is identified in the datasheet and installation instructions. If you are uncertain about any of these points, they can be confirmed by the supplier or the manufacturer.

Other areas to check as identified in the installation instructions, are has the trimming allowance been followed, has the frame to wall gap been filled using intumescent foam or mineral fibre and are the frame to door leaf gaps consistently 3mm on the top and sides.

Fire door identification explained

The bwf-Certifire fire door & doorset scheme has a variety of labels to suit the different ratings and requirements of each job. A majority of these labels have the manufacturers name and phone number, the certification number, a unique serial number and the rating. The BM TRADA Q-Mark Certification uses plastic plugs to identify the type of fire door. The label or plugs should never be removed or covered.

9. Fire Door Maintenance checklist

Maintaining a fire door is as critical as any role in the life cycle of a fire door. If you are responsible for the fire safety of your building you must check your fire doors every 6 months, or 3 months if your building has a high usage.

Label or plug

- Has the fire door got a bwf-Certifire fire door scheme label on the top edge?
- Or has the fire door got BM-TRADA plastic identification plugs located on the hinge stile just below the top hinge.
- If not, can you confirm that the door is in fact a fire door and has been certificated as such?

Door Leaf

- Does the door leaf sit against the door stop and is it free of distortion?
- If the door is veneered or lipped, is the glue still holding these products firmly in place?
- Is the door free from damage including dents, and holes?

Door Frame

- Is the door frame firmly attached to the wall?
- If a planted door stop is present, is it firmly attached?
- Is the frame to door leaf gap consistently 3mm? (tolerance of +/- 1mm)

Intumescent/Smoke/Acoustic seals

- Are intumescent seals in place? (if not install immediately)
- Are the seals well attached inside the groove in the frame or door leaf?
- Are the seals continuous around the frame?
- Are the seals free from damage?
- If you have a brush or fin type seal, is it free from damage or breakage?

Hinges

- Is there a minimum of 3 hinges with all the screws fitted?
- Are all the screws the correct size?
- Do the hinges exhibit play in the knuckle which is a sign of wear?
- Are the hinges free from packing?

Door Closers

- Open the door to 5 degrees or 75mm. Does it close and engage with the latch?
- Is the closer correctly attached to the door and frame?
- Is the closer free from damage and not leaking?
- If unlatched, does the closer hold the door in line with the frame and intumescent seal?
- If hung in pairs, do they close in line if both opened and released together?

Hold Open Devices

- Does the hold open device release the door when required?

Lock and Latch

- Does the latch hold the door firmly in place without rattling?

Glazing and Glass

- Is the intumescent seal continuous and attached to the glass and bead?
- Are the glazing beads well attached to the frame and free from damage?
- Is the glass free from damage and cracking?
- If the glass has been replaced, is it fire rated glass?
- If glazing panels are below 1500mm from bottom of door, is the glass safety glass

Threshold Gap

- Is there a consistent gap under the door that allows it to swing without touching the floor covering?
- Is the door to floor covering gap consistently 10mm or less when the door is closed?

If your fire door does not pass all aspects of this checklist then it could fail!

This is a guide is an overview of the subject. For specific instructions on your fire door, refer to the installation instruction or data sheet available from the door manufacturer.

For more information contact

BWF at www.bwf.org.uk

BM–TRADA at http://www.bmtrada.com/?qmark.asp?p=2&2

Fire Safety Advice Centre http://www.firesafe.org.uk/html/fsequip/firedoor.htm