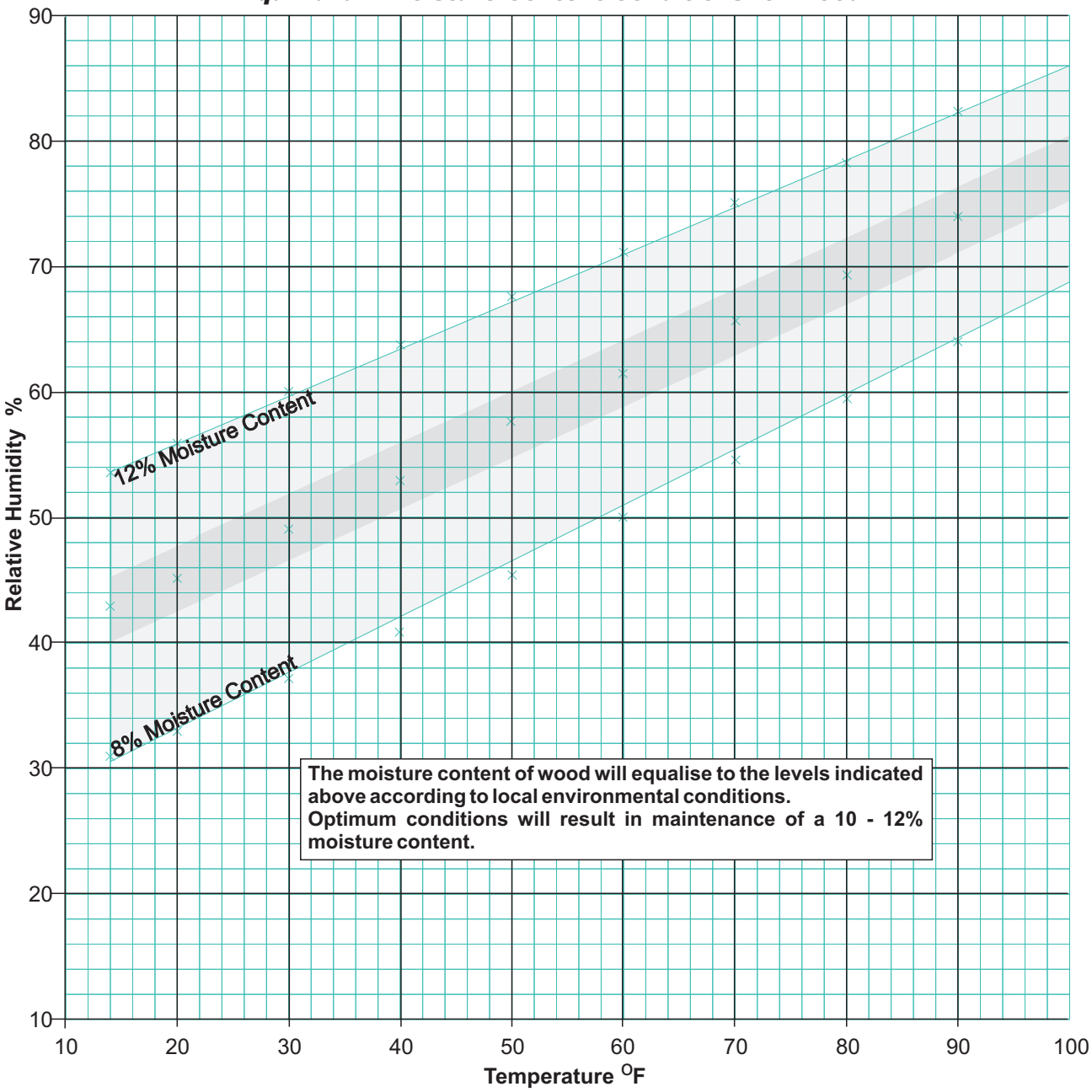
Equilibrium Moisture Content Conditions for Wood



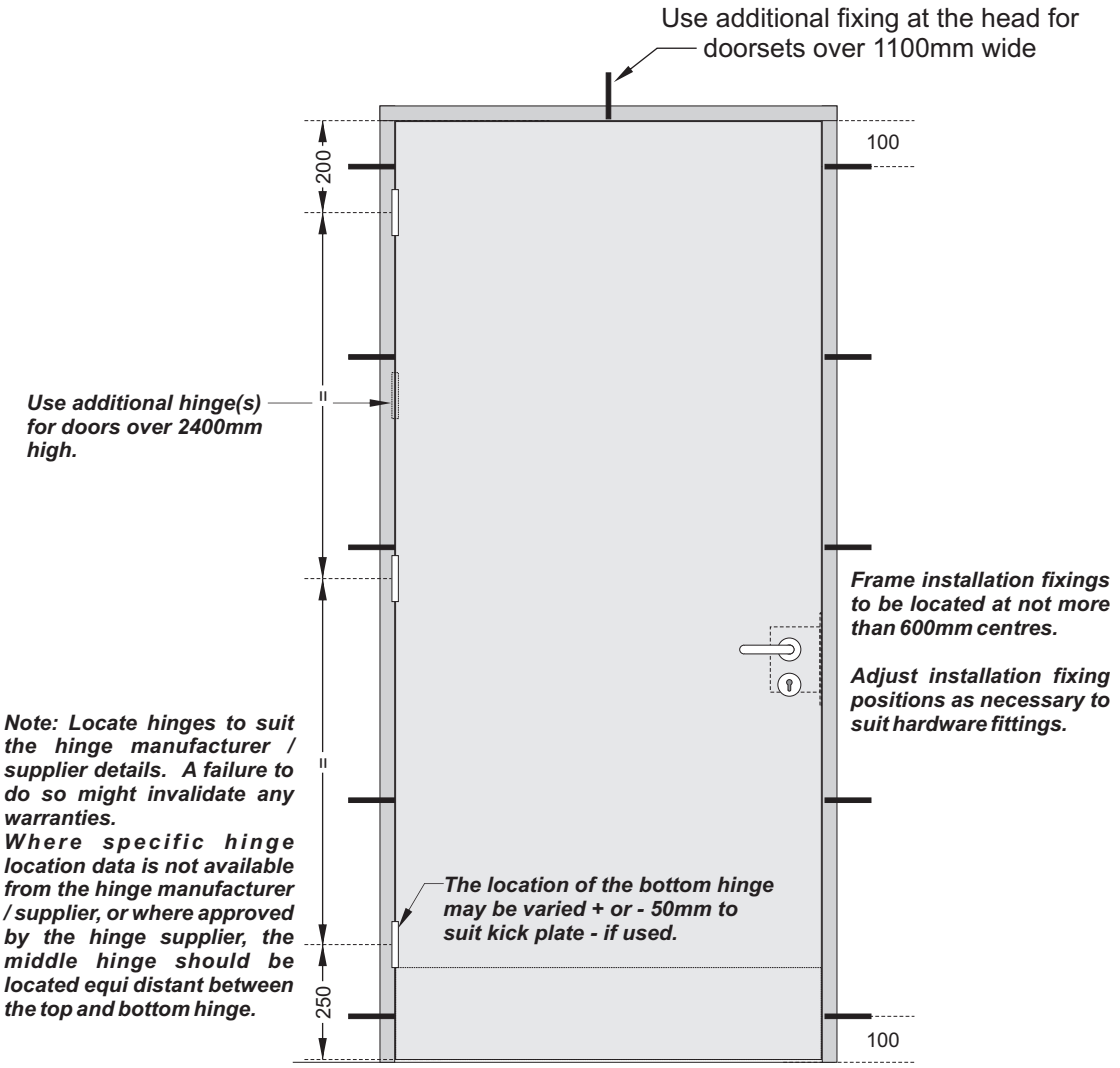
NOTE:

The above graph should be referred to for the purpose of storing FLAMEBREAK™ Door Blanks and subsequently for the storage and use of finished goods.

FLAMEBREAK™ Door Blanks, are wood products that are naturally hygroscopic. They will absorb or lose moisture according to local environmental conditions. Variations in moisture content will result in growth or shrinkage, (particularly across the grain of wood). This graph shows the environmental conditions that should prevail during storage (and subsequent use) to ensure that FLAMEBREAK™ products remain stable.

Rapid changes in environmental conditions, even within indicated tolerances, can give rise to more dramatic effects.

Fig. 16.1



Fire doors to be hung on a minimum of 3No. Hinges *(See Section 8 - Hardware)* for door heights up to 2100mm. For door heights less than 1500mm the quantity of hinges may be reduced to 2No. For door heights over 2100mm an additional hinge may be required.

The recommended Installation fixings for fixing to blockwork, brickwork or concrete = Rawlplug F100 *(or similar)*. Suitable length wood screws should be used for fixing to timber stud. Wood fire doors should not be fitted to metal stud partitions unless the metal stud around the doorset is filled with full length softwood to resist distortion. ***(OR: Unless the metal stud supplier can provide fire test / assessment evidence supporting the use of wood fire doorsets in the metal stud partitioning).***
The top fixing should be within 100mm of the head and 100mm from the bottom of the frame jamb, the remaining fixings should be *(approx.)* equispaced at not more than 600mm centres with a minimum of 4No. Fixings per jamb.

Care should be taken to ensure that frame fixing positions do not conflict with hardware positions

For doorsets over 1100mm wide, an additional frame fixing should be used centre width of the doorset.

Recommended Installation Procedure (Doorsets):

1/ Check the opening into which the doorset is to be fitted to ensure that it has been prepared to the correct dimensions and that it is plumb and square, within reasonable tolerances.
NOTE: Acceptable tolerances will vary according to the doorset design. In particular, the standard required to receive doorsets that are not fitted with architrave is more demanding.

2/ Position the frame centrally in the width of the opening and fix the hanging jamb using fixings worked against wedges to ensure that the hanging jamb is plumb and square and aligns correctly with the opening.
NOTE: For pairs of doors select one hanging jamb as the primary jamb for this purpose.

3/ Hang the door leaf and align the secondary jamb and head such that the operating gaps between the door and frame are equal. This can be done by visual assessment.
NOTE: The important thing is that the door leaf (leaves) is / are used as the installation template and not the surrounding structure.

4/ Remove the doors and ensure that the frame is fixed firmly in the opening.

5/ Rehang the doors and check for operation. Adjust fixings as necessary to obtain correct operation while maintaining operating gaps within BS4787 tolerances.
NOTE: For some locations (particularly where edge fixed smoke or acoustic seals are used) it might be necessary to apply a leading edge (trim the closing stile of the doors). The minimum amount of lipping material should be removed for this purpose with the closing stile bevelled such that the closing face of the door is narrower than the opening face.

6/ Cover fixings using pellets or by other means.
NOTE: Fixings can be covered by door stops, suitably sized intumescent seals (where these form part of the doorset design (DO NOT USE ADDITIONAL HIGH PRESSURE INTUMESCENT SEALS FOR THIS PURPOSE).

7/ If a loose doorstop is used, fix the doorstop to suit the face of the door using 32 - 38mm steel pins, fixed at an angle, punched with pin holes filled.
NOTE 1: Use suitably coloured wood filler or hard beeswax to fill pin holes.
NOTE 2: Where smoke (acoustic) seals are used with the doorstop, ensure that sufficient space is left to accommodate the smoke (acoustic) seal or that the smoke (acoustic) seal is fitted to the doorstop before fitting the doorstop to the frame.

8/ Apply packing to the void between the frame and the surrounding structure to comply with recommendations to be found by reference to BS8214 : 2008.
NOTE 1: If in doubt, pack these voids with mineral wool.
NOTE 2: Some frame designs might allow for the insertion of intumescent seals at the back of the frame to the satisfaction of BS8214. These should be fitted to the frame before installation of the doorset.
NOTE 3: Building Control Officers may wish to inspect the doorsets at this time to ensure compliance with the regulations applicable to the building for fire certification reasons.

9/ Cut architrave to the lengths required for the particular location and apply mitres as necessary. Fix architrave using 32 - 38mm steel pins, fixed at an angle, punched with pin holes filled as described for door stops.

10/ Fix projecting hardware and test the doorset for the correct operation.
NOTE: It is recommended that the environmental conditions are measured at the time of installation of the doorset with this information recorded for possible reference in the event of later moisture content related problems resulting from variations in environmental conditions.

11/ Clean the doorset and offer for handover to the Main Contractor (Client).

12/ Apply protection to the doorset as required for the particular project.
NOTE: It might be necessary to remove some items of hardware for this purpose.

GENERAL NOTES:
1/ The above sequence may be varied to suit the normal working practices of the Installation Contractor.
2/ For edge fixing into FLAMEBREAK™ cores always drill suitably sized pilot holes and fix using fully threaded 'Twinfast' or course threaded chipboard screws. The screw length should be min. 1 1/2 in. (38mm) for load bearing hardware.

4 Appendix 1 Doorset Maintenance Recommendations

FLAMEBREAK

Rev.D

Maintainance Recommendations:

FLAMEBREAK™ cores are maintenance free.

Veneered Doors:
Polish occasionally as required using standard household furniture polish.
Every 5 years refurbish veneered doors and polished frames as follows:
Clean with white sprit.
Apply soft coloured beeswax using grade 00 wire wool working in a circular motion to ensure that the wax fills the grain.
Remove surplus wax using a clean knap free cloth.
Reduce the gloss level by buffing with clean grade 00 wire wool.

Laminate faced Doors:
Clean as necessary using warm soapy water.
Treat frames and hardwood lippings as described for Veneered Doors.
NOTE: Alternatively lightly sand lippings and re apply clear lacquer.

Paint grade Doorsets:
Clean as necessary with warm soapy water.
Re paint at approx. 5 year intervals following paint manufacturers instructions.

Ironmongery:
Lubricate hardware as required by reference to ironmongery suppliers data.
NOTE: Some items of hardware e.g. Hinges with oilite bearings should not be lubricated.

Where it is necessary to remove and replace worn hardware, any intumescent seals or gaskets used for the original fit should also be replaced.

Intumescent Seals:
Intumescent seals should be inspected monthly for the first year of operation and thereafter at quarterly intervals.

Any worn or damaged intumescent seals should be replaced with seals of an identical brand / type.
NOTE: High pressure seals should not be replaced with low pressure seals and vice versa.

Smoke Seals:
Smoke seals should be inspected monthly for the first year of operation and thereafter at quarterly intervals.

Any worn or damaged smoke seals should be replaced with similar seals.
NOTE: Doorsets receiving replacement smoke seals should be tested and eased as necessary to ensure that the seals do not interfere with the operation of the doors. The doors should close and latch from any open angle position under closer force only.

Glass & Glazing:
Where glass is to be replaced the replacement glass should be of the same type as the original glass. All glazing intumescent and beading should also be replaced to the same detail as the original installation.

Door Adjustments:
Adjustment of Fire Doors after installation is not recommended. However, where this is necessary, the resultant operating gaps after adjustment should satisfy BS4787 Pt. 1 : 1980.

GENERAL NOTE:
Refer to BS8214 : 2008 for further advice concerning maintenance of Fire doors.

1 Installer Qualifications

It is strongly recommended that the installer is a member of a recognised quality assurance scheme to ensure that best practice is used.
In respect of fire doors, inspection authorities may require evidence that the installation process complies with the tested specification including:

- *Intumescent systems.*
- *Compliance of the glazing with the tested detail supplied by the door manufacturer.*
- *The size of all operating gaps.*
- *Intumescent protection around hardware and the quality of the preparation.*
- *The quality of the supporting construction and the prepared opening.*
- *The fixing of the fire door.*
- *Fire and smoke stopping methods used in fitting-in gaps and voids.*

2 Pre-installation preparation.

2.1 First or second fix.

Best practice is a second-fix operation with openings prepared as construction proceeds and pre-hung door assemblies installed later. The advantages are:

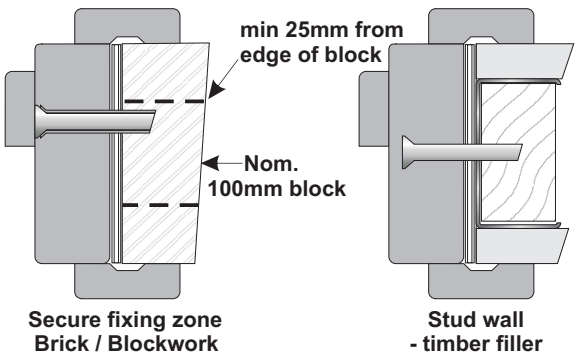
- *Operating gaps (which may contain edge seals) can be maintained.*
- *Doors are delivered when site conditions are suitable.*

Using the 'first-fix' method, doorframes are built in during construction and door leaves are fitted later. This can be unsatisfactory because:

- *Construction operations and wet trades can damage finishes and cause distortion and / or swelling. The cost of remedial and protection can be high.*
- *Door leaves may have to be tailored to each opening.*

2.2 Doorframe design

The doorframe design must allow for secure fixing.
Note 1: Fixing within 35mm from the edge of masonry (excluding any plaster) should be attempted.
Note 2: Fixings into metal stud partitions should be made into a full length timber filler in the stud.
Make fixings to each jamb spaced 100mm from the top and bottom of the frames with intermediate fixings positioned at max. 500mm centres. *(A centre fixing through the head is sometimes used where deflection is a risk).*



2.3 Co-ordinating dimensions

The co-ordinating height, width and thickness of prepared openings, the fitting-in margin and allowed tolerances must be planned. This information must be available before the commencement of door manufacture.

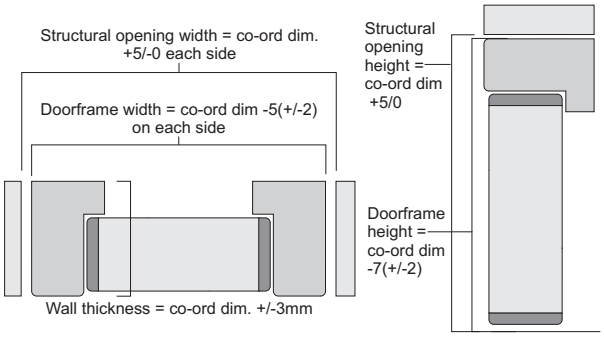
2.3.1 Prepared openings

Prepared openings must be plumb, square and built to the co-ordinating dimensions subject to a tolerance of +5/-0mm at each jamb and +5/-0mm at the head and be of a constant co-ordinating thickness around their perimeter within a tolerance of +/-3mm. It is vital to control partition thickness if architraves are to be fitted without excessive trimming and scribing.

- *Check accuracy of prepared openings as early as possible so that any remedial work can be completed before any attempt is made to install the doors.*

2.3.2 Doorframe size and fitting-in margin

The overall doorframe dimensions should be the co-ordinating height and width -5mm *(+/-2mm)* on each jamb and -7mm *(+/-2mm)* at the head.



2.4 Recessing for floor mounted closer boxes

- *Plan pockets to receive closer boxes in floors and screeds. The pockets must be formed and located with great accuracy to co-ordinate with the doorframe position.*

3 Site reception

3.1 Moisture content

Timber doors are manufactured with a moisture content of 10~12% for internal use and 12~14% for external use. The applicable standard on this subject is BS EN 942 : 2007 Timber in joinery. General classification of timber quality.

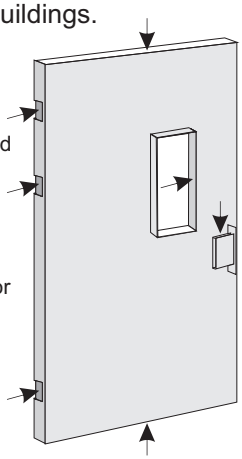
- *Do not bring joinery to site until moisture readings are between 40~60% RH and until any forced-drying procedure has been completed.*

3.2 Storage area

- *The store must be clean, level, suitable for stacking doors and provide sufficient space for doors to be moved around, sorted and re-stacked as installation proceeds. The floor should be suitable to allow the use of pallet moving equipment.*

3.3 Priming and sealing

The applicable British Standard is BS 6150 : 1991 Code of practice for painting buildings.



- Prime or seal all items supplied 'in the white immediately following delivery including top and bottom edges, apertures and preparations for hardware.
- Apply further coats within a reasonable time and before door leaves are hung or assemblies are installed.

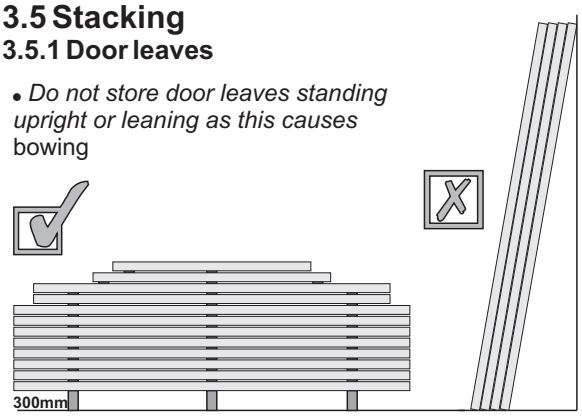
3.4 Handling

- Avoid bruising and damage caused by heavy contact with the ground. Wear clean glloves to avoid leaving finger marks.

3.5 Stacking

3.5.1 Door leaves

- *Do not store door leaves standing upright or leaning as this causes* bowing



- *Stack horizontally on level supports that extend across the full width of the bottom door leaf. Provide support and at 300mm from each end. If over 2150 in height, provide intermediate supports.*
- *Cover the supports with cardboard or similar to prevent marking.*
- *Stack with the largest door leaf at the bottom with size reducing up the stack. Plain flush doors can be stacked to a maximum of around 20 door leaves. When door leaves have projections such as glazing beads or pre fitted hardware, provide level intermediate battens between door leaves to allow clearance.*

3.5.2 Assemblies

The same principles apply when storing door assemblies.

- *Stack with the door leaf lying in the closed position on the door frame doorstop. Separate each assembly with level battens to ensure that projections such as hinge knuckles do not cause damage.*

3.5.3 Covering

Exposure to light may fade timber.

- *Cover stacks with opaque sheeting to prevent fading and keep doors clean. This is very important with veneered doors.*

4 Hardware

4.1 Preparation for hardware

- *Before installation, prepare doors to receive hardware using instructions provided by the hardware manufacturer or supplier.*

Note: Preparations are often available from the door manufacturer. These may be supplied 'off machine' i.e. with corners not squared out. Factory assembled doors can be made available fully prepared for hardware with door leaves hung in position though possibly removed for transit.

4.2 Fitting hardware

- *Fit hardware using instructions provided by the hardware manufacturer or supplier.*
- *Fit morticed hardware before hanging door leaves or installing door assemblies.*
- *Fit intumescent materials exactly in accordance with details supplied.*
- *Fit face fixed hardware at any convenient stage in the installation programme.*

Note: This work is often done immediately prior to handover to avoid risk of loss or damage. The drilling of door leaf faces for latch spindles and keyways or cylinders is best left until there is no further risk of further adjustment to the position of the lock cases or keeps.

- *Lubricate hardware as required by manufacturers instructions.*

5 Glazing

The applicable standard is BS 6262 Code of practice for glazing of buildings.

- *Glaze fire doors strictly in accordance with a specification for each type provided by the supplier and supported by evidence of test or assessment by a recognised authority.*

6 Door Installation

- *Install doors only when site conditions are suitable.*

Note: Operating gaps around door leaves will vary between 1.5 ~ 4mm. Any movement of the structure after doors are installed will definitely affect these margins and cause malfunction. Movement results from:

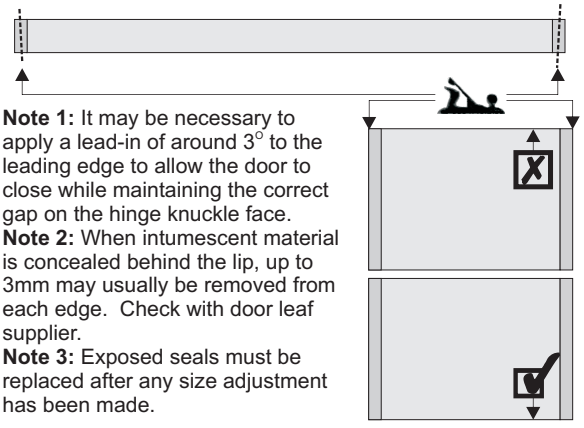
- ***Shrinkage due to drying out.***
- ***Growth due to increased moisture.***
- ***Deflection of structural members.***

- *Defer installation if conditions are unsuitable*

6.1 Hanging Door leaves

6.1.1 Trimming edges

- ***When it is necessary to trim door leaves, remove equal amounts from each vertical edge and make all height adjustment to the bottom of the door leaf.***



Note 1: It may be necessary to apply a lead-in of around 3° to the leading edge to allow the door to close while maintaining the correct gap on the hinge knuckle face.
Note 2: When intumescent material is concealed behind the lip, up to 3mm may usually be removed from each edge. Check with door leaf supplier.
Note 3: Exposed seals must be replaced after any size adjustment has been made.

6.1.2 Hinges

Hinges must be able to support loads imposed by the door leaf and hardware functions such as self-closing and back check.

Consult the hardware supplier if necessary.

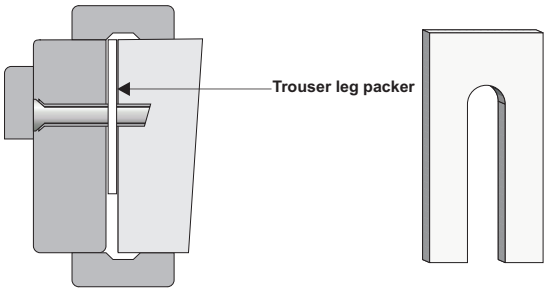
- *Use 3 hinges per door leaf for all fire doors above 1200mm in height unless otherwise specified.*
- *When door leaves exceed 2250mm in height or 160kgs (weight), consult the hardware supplier. One or more additional hinges may be required.*

Note: Hinges should be located to conform to the hinge manufacturers recommended position. In the absence of such guidance it is recommended that the top hinge should be located to centre 200mm from the top of the door. The bottom hinge should be centred 250mm from the bottom of the frame jamb (this will clear most kick plate requirements). The third hinge may be centred between the top and bottom hinge (if required by reference to fire test / assessment data) OR approx. 200mm below the top hinge.

6.2 Installation second fix

6.2.1 Packing

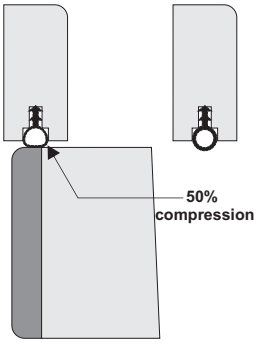
- *Pack between the doorframe and the prepared opening immediately above each fixing position. Ensure that the door assembly, when in position is perfectly plumb and square. The best practice is to use the hung door leaf as the fixing template. Avoid later shrinkage by using packing that is durable, hard and stable. The use of proprietary 'trouser leg' packers is recommended. Alternatives are offcuts of laminate, or plywood.*
- *Ensure that jambs are straight, operating gaps are even and within tolerance and that fixing screws cannot distort the frame when tightened.*



Note: The lateral force at the bottom hinge position can compress packings and metal studs causing the leading edge to drop. Before installing, ensure that studs are secure and that fillings are dry.

6.2.2 Fixing

- *When the doorframe has been packed into the prepared opening, remove door leaves if necessary to facilitate fixing.*
- *Fix doorframes in masonry in conjunction with plugs and woodscrews with minimum 50mm penetration into the masonry.*
- *Fix doorframes in metal stud partitions with woodscrews having drilled a pilot hole through the stud into the timber stud filler. Ensure that the doorframe fixing pulls the timber filling tightly into the stud and pulls the stud tight against the packing.*
- *Re-hang door leaves. Check and adjust for correct gaps and operation of seals. Compression seals should be 50% compressed along their entire length. Blade and brush contact seals should overlap the opposing face by 0.5~1mm*



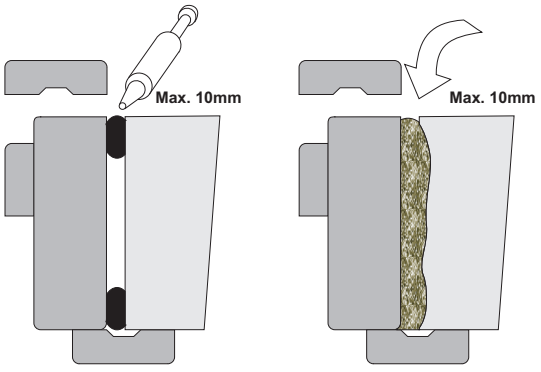
Note: Adjustment to the fit of door leaves at the installation stage should be deferred until the site is completely dry when the need for adjustment will be fully apparent and can be remedied in a single operation:
- Adjustments made too early can result in excessive gaps as the building dries.
- If possible, carry out adjustments by reducing or increasing packing. Alternatively, pack out behind hinges or recess them further.
- Only as a last resort should door leaf edges be trimmed, this may necessitate replacement of seals and repositioning of hardware affecting the quality and integrity of the door.

6.2.3 Doorstops

- *Fix loose doorstops after all adjustment. Fit to suit the shape of the door leaf, permit an easy latching action and ensure any seals are in correct contact with the door face.*

6.2.4 Stopping the fitting in gap

- *Fill the fitting-in gap to suit fire, smoke or acoustic requirements before fitting architraves or installing the second half of split frames with integral architraves. Architraves alone may fire stop gaps for FD30 doors but do not prevent the leakage of cold smoke.*



Note 1. To prevent cold smoke leakage the filler must completely close the gap and have some flexibility.
Note 2. When the fitting-in gap is constant and does not exceed 10mm the options include:
- Gun-applied intumescent mastic suitable for both fire and smoke stopping.
- Intumescent strips (with convential mastic for smoke).
Note 3. Large or irregular gaps or voids can be filled with cementitious material, packed with mineral wool or sealed with intumescent material. The intumescent options for gaps up to 35mm that can accomodate some movement and close voids in the case of fire are intumescent plasters, acrylic emulsions and dry foams.

- *Fix architrave only when any required stopping is complete.*

6.2.5 Concealment of fixings

- *Dress exposed fixings of doorframes, doorstops and architraves as specified.*

Note 1: This operation and the final fitting of architraves should be left until all adjustments to gaps and door leaf operation have been made.

Note 2: Screws are normally concealed with timber or plastic pellets. Pins are punched and filled with hard beeswax coloured to match.

6.2.6 Cleaning

- *Remove all dust, clean the installed door and make good any damage to finishes according to instructions provided by the manufacturer.*

7 Handover

The installation process will usually conclude with an inspection and handover procedure when the installation at the point of delivery from the responsible contractor is verified as compliant with any certification and is operating satisfactorily.

A maintenance period normally follows during which the responsible contractor will correct defects that are his responsibility. Beyond this, ongoing maintenance of the installation is the responsibility of the owner (or user) of the premises. A suggested checklist of routine maintenance is given in Appendix 2.

8 Specialist services

Because door installation and maintenance is a specialised trade, it may be considered advantageous to employ a specialist contractor to carry out a planned routine combining the inspection and corrective action procedures.

9 Priority actions

Priority should be given to:

- *The continued correct operation of the doors.*
- *The preservation of operating gap sizes within the range described in test or assessment reports relating to the installed fire doors.*
- *The preservation or replacement of elements of the door that may be subject to degradation through wear or damage e.g.:*
  - *Glass and hardware.*
  - *Intumescent, acoustic and smoke seals.*
  - *Applied finishes.*

9.1 Pre-emptive inspection programme

The objective must be to pre-empt malfunction and defects helped by a planned programme of inspection.

Corrective action is likely to be required more frequently during the early life of an installation. The small movements that occur in the building fabric at this stage can affect gap sizes. The presence of smoke or acoustic seals can make door operation even more sensitive to small changes in gap sizes.

9.2 Reporting of malfunctions

It is also vital to the quality of the installation that building users report malfunctions immediately and that there is a system that provides for recording these and for prompt corrective action.

10 Damage prevention

Much damage to doors is caused by abusive use of the building. This may be unintentional and result from inadequate planning or briefing of personnel on the correct operation of the door system. Those who use equipment that is potentially damage-causing can be trained and encouraged to prevent this.

Personnel using the building can make an important contribution to maintaining the quality and safety of the door installation if they are encouraged to use the installation in a caring manner.

10.1 Protective measures

Planning the operation and protection of doors will play an important part in the avoidance of damage to the door installation. The following measures will reduce the more predictable causes of damage:

Type of damage	Preventative measure
Damage caused by objects being wheeled or dragged through the doorway: **Damage to faces and the leading edge of door leaves.** **Broken lippings, damaged smoke and intumescent seals.**	The use of a hold open device with doors on frequently trafficked corridors linked in with a fire detection system, if applicable. Delayed action closers set to allow for the passage of encumbered users and wheeled items.
Damage caused by impact by wheeled equipment. **Dislocation of doorframe fixings.** **Damage to doorframes, door faces and edges.**	Rail or guards that will deflect the equipment. Recesses in corridor walls within which held-open door leaves will be protected from edge damage. Fit buffers to equipment.

11 Troubleshooting door malfunction

Malfunctions arise from a variety of causes. It is important that these be corrected promptly to minimise damage and avoid any compromising of safety.

11.1 Binding

The most common malfunction is a loss of operating gaps that result in door leaves sticking or failing to close correctly. It may be that the leading edge binds on the doorframe or at meeting edges of double leaf doors. Often the bottom edge of a door will bind on the floor.

The causes of and suggested remedies for this can be:

Defect	Possible cause	Remedial options
Swelling of door components due to moisture intake.	Moisture content in the building is too high.	Reduce humidity. Do not adjust doors unless essential until the moisture content is stable at 12% (for internal use).
Hinges have worked loose allowing door leaf to fall away from the hanging jamb.	Stressing caused by racking or blocks put in hinge side rebate to hold doors open. Wrong size screw fixings. Not all screw positions have been used.	Remove obstructions. Tighten fixing screws. If necessary increase screw size. Replace if defective. Provide restraint to prevent racking
Hinges have worn allowing door leaf to drop.	Hinges are not to the correct BS EN 1935 class for the application.	Replace with correct class of hinge.
Doorframe jambs have spread at the bottom allowing the leading edge of the door leaf / leaves to drop.	Door leaf weight may cause compression of packing or stud due to the effect of lateral load at the bottom hinge position.	Check that the background is stable and that it will support the lateral load. Re-pack at fixing positions particularly at the bottom, until the door leaves hang correctly. Re-fix doorframe.
Doorframe fixings are loose.	Racking exerting leverage on doorframe fixings. Overdrilling or breakout of fixing positions. Impact from wheeled loads.	Re-pack and correct the hang of the door leaf. Tighten fixing screws and if necessary replace failed plugs or make new fixing positions. Provide restraint to prevent racking. Provide protective rails / guards to deflect wheeled traffic away from the door frame.
Door leaf binding on floor.	Floor covering may be over planned thickness. Possible high spot in screed within the arc of the door. Doorframe not set plumb.	Re-fix the door as necessary. Packing under frame jambs may raise the door sufficient to clear obstacle.
Binding and none of the previous apply.	It is possible that the edge gap has been set too fine.	Adjust the gap by deepening or moving the hinge recess/es in the door frame or leaf. Bevel closing stile to maintain a minimum gap on the hinge knuckle face.

Note: The edges of door leaves should not be planed or otherwise modified unless it is impossible to correct the fault by other means. If door leaves are adjusted, any intumescent and smoke seal that is damaged will have to be replaced.

11.2 Oversize gaps

Operating gaps may become enlarged and may exceed the range permitted by specifications and test and assessment reports.

The causes and suggested remedies can be these:

Defect	Possible cause	Remedial options
When no smoke or acoustic seal is present: Gaps in excess of range permitted by test / assessment reports.	Shrinkage of door components, packingss and timber grounds, studs or subframes.	Pack out behind hinges. If necessary re-pack and re-fix doorframe. Re-lip (by manufacturer) and replace seals.
When smoke or acoustic seal is present: Any visible gap.	Shrinkage or disturbance caused by impact. Seals have worn or have become permanently compressed. Extended pivot centre hanging devices.	Pack out behind hinges. If necessary re-pack and re-fix doorframe. Replace seals with new or larger. Profile closing stile of leaf to suit closing arc of door.

Note: The edges of door leaves should not be planed or otherwise modified unless it is impossible to correct the fault by other means. If door leaves are adjusted, any intumescent and smoke seal that is damaged will have to be replaced.

11.3 Failure to close

In addition to closing failure caused by loss of operating gaps, other defects can develop or become apparent:

Defect	Possible cause	Remedial options
Hinge binding resulting in the door leaf tending to spring open.	Hinges have not been sufficiently recessed. The doorstop is too tight on the closing face of the door leaf at the hinged edge.	Modify fitting of hinges. Adjust position of doorstops. Reset hinge positions when doorframe has an integral doorstop.
Door leaves twisted, bowed or cupped.	Twist caused by hold open device tht is not level with the closing force. Hygrothermal differences on faces.	Remove the cause; the door leaf may return to a flat condition. If not, replace door leaf. Relocate hold open device. Reduce the effect by relocating hinges.
Door leaves fail to latch	Closer failing to overcome resistance of latch or seals. Latch bolt and keep plate may have become misaligned. Door bolts may not be engaged. Misalignment of door bolts and sockets.	Adjust closer speed and latching action. If necessary fit larger closer. Change seals. Reposition keep plate. Ensure that users engage bolts at top and bottom of door leaf. Realign bolts with sockets by adjustment of the doorframe fixings.
Binding of smoke or acoustic seals when none of the previous problems apply.	It is possible that the leading edge gap has been set too fine. Seals may be broken or disrupted by wear due to incorrect fitting.	When applicable, modify retaining grooves to suit. The seals, if in good condition, may be refitted. Fit smaller seals. If damaged, seals should be replaced with attention to correct fitting and cause of disruction.

Maintenance check list for doors

Premises _____

Door

Door No.
Location
Door Manufacturer
Fire Assessment Ref.
Date Installed
Hardware supplier
Hinge type
Closer type
Lock / Latch Type
Bolts

Door Leaf

Is it warped
Is it split / cracked
Other evident damage
Edge lipping condition
Meeting edge gap double doors closing correctly
Closer effective
Modifications added since last inspection

Doorframe

Signs of damage
Well fixed / sealed to surrounding structure
Max. leaf / doorframe gap
Max. leaf / threshold gap
Max. leaf doorstop gap

Seals

Are edge seals complete
Any damaged seals
Protection where necessary at hardware
Are smoke seals fitted
If yes, are they in good condition and effective

Glazing

Glass damage
Retaining system in good condition
Retaining system correctly fixed
Any change since last inspection
(e.g. broken glass replaced)

Hardware

Hinges

Correctly fixed
Working correctly
Need lubrication

Closers & Selectors

Correctly fixed
Working correctly
Double doors closing in correct order *(where applicable)*
Needing lubrication
Overrides any latch mechanism / seals

Locks / Latches

Correctly fixed
Working correctly
Needing lubrication

Hold open devices

Fixed in correct position
Releases correctly

Bolts

Aligned with sockets
Well fixed
Working correctly
Damage around bolts

Signs

Correct fire signage on both sides of door

Additional Hardware

Added since last inspection
(e.g. letterplates, bolts etc.)

Appendix 3 & 4 of this document are reproduced from the Architectural and Specialists Door Manufacturers Association publications.

Pacific Rim Wood Ltd.
are members of:

Architectural & Specialist Door Manufacturers Association
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Telephone: 01494 447370
Fax: 01494 462094
E-mail: info@asdma.com
Online: www.asdma.com

Pacific Rim Wood Ltd.,
Unit 3, Kingdom Fields,
Bratton Fleming,
Barnstaple,
Devon. EX21 4EN

Tel: +44 (0)1598 710100
Fax: +44 (0)1598 710900
E-mail: pacrim@btinternet.com

Appendix 4
UKAS Approved
3rd. Party Certification bodies

Rev.D

Whereas this Manual is based upon 3rd. party certification provided by BM TRADA under the 'Q' Mark scheme, Pacific Rim Wood Ltd. recognise that users of FLAMEBREAK™ may prefer to belong to alternative schemes.

Pacific Rim Wood Ltd. will support users of FLAMEBREAK™ by providing base test data for use by the following UKAS approved 3rd.party certification bodies and may assist in other ways.

The following information has been provided by leading 3rd. party certification providers to describe brief details of their services and contact details.

BM TRADA:
BM TRADA is a UK and internationally recognised provider of high quality customer focused independent third party certification. A member of the BM TRADA Group with 75 years experience, the company is UKAS (United Kingdom Accreditation Service) accredited and offers the 'Q-Mark' certification scheme, one of the most rigorous certification processes available.

Q–Mark certification scheme:
Q-Mark is a membership-based certification scheme which companies can join either as manufacturers, system/blank suppliers or fabricators using Q-Mark approved products. Additional schemes are also available for registered installers of windows and doors. Q-Mark product certification provides the reassurance to customers and specifiers that the certified products are not only fit for purpose and therefore safe to use, but they have satisfied the most stringent of quality processes.

Specifiers are increasingly using Q-Mark to ensure that their products meet the highest standards. This is particularly important in life saving products such as fire doors. Approved Document B recommends the use of independent third party product certification such as Q-Mark for demonstrating performance of fire doors.

Product certification criteria:
To achieve Q-Mark product certification, members are required to prove to BM TRADA's own team of specialist auditors that their products perform to the relevant standard and that stringent factory production control processes are in place. All members must have independent test evidence in the form of a product test report from a UKAS or recognised equivalent accredited laboratory. Any variations in the fire door specification from the tested product can be catered for with a Chiltern Fire Global Assessment Report. Members also need to provide evidence of a traceable documented factory production control system which controls the specification, quality and consistency of manufacture.

On-going certification requirements:
Ensuring that our members maintain the very highest standards of product quality is a stringent criterion of the Q-Mark product certification scheme. Annual and in certain cases twice-yearly audits are carried out to confirm that the original certified specification is fully adhered to throughout the production process. In addition we periodically insist on undertaking full product testing to prove that not only do our members' products continue to perform to standard, but that the specifications accurately reflect those of the originally tested product.

Additional requirements:
For safety critical products, such as fire doors, we also provide additional training through our in-house seminar and demonstration programmes.

BM TRADA Q-MARK
Head & Registered Office:
Chiltern House
Stocking Lane
Hughenden Valley
High Wycombe
Buckinghamshire HP14 4ND
United Kingdom

Tel: +44 (0) 1494 569 800
Fax: +44 (0) 1494 564 895
Email: enquiries@qmark.info
Web: www.qmark.info

LPCB (Loss Prevention Certification Board) is part of BRE Global and is an independent third party approvals body offering certification of fire and security products and services to an international market. Our product testing and approvals are carried out by recognised experts in our world renowned testing laboratories. Overall BRE Global Limited is custodian of a number of world leading brands including:

- LPCB for the approval of fire and security products and services, listed in the Red Book (www.redbooklive.com)

- BREEAM, the world's leading environmental assessment method for buildings

BRE Global's mission is to 'Protect People, Property and the Planet' and is a trading subsidiary of the BRE Trust, the registered research and education charity which owns the BRE Group.

For further information please contact: BRE Global, Garston, Watford, UK WD25 9XX, Tel: +44 (0)1923 664100, Fax: +44 (0)1923 664910, Email: enquiries@breglobal.com or visit www.breglobal.com

Certifire – A mark of Fire Safety

Warringtonfire deals with all aspects of fire safety from developing fire safety design strategies, through testing and certification of fire protection products, to certification of installers and inspection of completed buildings. Certification is provided via a separate company – Warrington Certification.

Warrington Certification provides certification of products, installers and quality management systems in accordance with internationally recognised standards. Where appropriate, each scheme is approved or accredited nationally, normally via UKAS. All schemes are operated under the direction of an independent management board representing all stakeholders in fire safety.

Product certification can be divided into 2 categories; Voluntary and Mandatory.

Voluntary certification is chosen freely to promote performance and quality. Products are certificated under **CERTIFIRE** and companies that install fire protection products are certificated under **FIRAS**

Both **CERTIFIRE** and **FIRAS** offer significant advantage in promotion and recognition of products and services and provide confidence to the end user.

The Certifire scheme is accredited by UKAS to EN45011 and complies with the requirements of Level 5 certification as specified in ISO/IEC Guide 67:2004, Conformity assessment – Fundamentals of product certification.
Certifire is the only independent third party product conformity scheme dedicated to passive fire protection products. To obtain certification products are required to undergo:

- Initial type testing
- Factory production control audits or inspections
- Independent audit testing and independent sampling of the products
- Quality management system certification to ISO 9001:2000
- Product labelling

A comprehensive field of application document is produced following the certification process and this has proven to be a much valued aid to sales.
Certifire has been in operation over 15 years and has become the flagship mark for the fire performance of passive fire safety products and is now recognised as a true 'Mark of Fire Safety'

Products must satisfy the requirements of detailed Technical Schedules that prescribe the performance and design characteristics required of a product to perform its fire protection function. The specific Technical Schedules are listed adjacent. Testing for fire performance and other attributes such as mechanical and durability performance is carried out. The Schedules, drafted by Warrington Certification and industry experts, draw on harmonised European tests where available, or British Standard tests or other recognised International standards. Type and audit testing is conducted on independently sampled product and manufacture is subject to independent factory production control inspection. The BWF-Certifire Timber fire door scheme is nationally recognised as the leading certification scheme for timber fire doors with the vast majority of the fire doors sold in the UK being covered by this certification

Certifire certification offers significant advantage in promotion and recognition of fire safety products showing that the product has been assessed by an independent third party and that these assessments are ongoing. This provides confidence to the end user. The presence of the Certifire mark shows that the product is a Fire Safety product. Certifire certification is backed up by entry into a free issue Directory which is divided into relevant product sectors. This is available via www.warringtonfire.net/certifire and full copies of all current Certifire certificates can also be accessed via this link and are available for download.

Mandatory certification is that required by regulation e.g. in Europe the Construction Products Directive and the Marine Equipment Directive, which require products to be marked (e.g. CE marked) to indicate compliance. Within Europe Bodycote warringtonfire certification operates as both a Notified Body and as a European Technical Approvals issuing body.

Warrington Certification also provide **ISO 9001:2000 certification** of quality management systems primarily in support of other schemes to provide a cost effective solution to client needs.

Email: certifire@warringtonfire.net

Web: www.warringtonfire.net/certifire

Warrington Certification
Holmesfield Road
Warrington
Cheshire
WA1 2DS
Great Britain

Tel: +44(0) 1925 646 669
Fax: +44(0) 1925 646 667

IFC certification

IFC Certification Ltd (IFCC), a member of the internationally renowned **IFC Group**, provides customer focussed independent third party certification of fire protection products. It is the highest level of approval you can gain for your products.

Product Certification

The IFC Certification quality mark is designed for manufacturers to demonstrate the superiority of their products over those which are not subject to such stringent approval processes. Certification requires not only initial type testing but includes procedures to ensure that subsequent production will also have the same performance.

IFCC product certification schemes complement the IFCC schemes for the certification of installers. Together they provide a system to give confidence to specifiers, contractors, enforcement authorities, regulators, end clients and building users that proven products together with good installation will achieve the required level of fire performance.

All IFCC schemes are accredited by UKAS and meet the requirements of an increasing number of jurisdictions that recognise or require the benefits that third party product certification brings.

The certification process…
IFCC evaluates products by a process of type testing, audit testing and assessment against defined criteria that establish a field of application to help ensure that products are specified and used within their approved scope.

Testing is normally conducted against British (BS) or European (EN) standards but other international or industry standards may be used to suit particular requirements.

To ensure traceability and consistency of production and performance of products, IFCC regularly audits the manufacturer's factory production control processes.

Certificated products are required to be labelled to ensure traceability even in the completed building. All certificated products and company details are listed in our online Register at www.ifccertification.com

Installer Certification

IFC Certification Ltd (IFCC) also provides independent third party certification of installers of fire protection products. To be effective in preventing or controlling the spread of fire these products need to be installed properly to a high standard of workmanship and within their approved field of application. Failure to do so risks compromising fire performance with consequent risk to property and ultimately life safety.

The IFC Certification quality mark enables installer companies to demonstrate the superiority of their installations over those which are not subject to such stringent third party inspection processes.

For further details of all our schemes and other certification services or to discuss your individual requirements please contact:

IFC Certification Ltd
20 Park Street
Princes Risborough
Buckinghamshire
HP27 9AH
United Kingdom

Tel: +44 (0) 1844 275500
Fax: +44 (0) 1844 274002
E-mail: info@ifccertification.com
Web: www.ifccertification.com

CI/SfB Ro8 (K3)
February 2006

Fire-Resistant Glass Range

Pilkington **Pyrostop**™
Pilkington **Pyrodur**™
Pilkington **Pyroshield**™

PILKINGTON

Trust. In a fire it's more important than ever.

Burning Questions, Brilliant Solutions.
Specifying the right fire-resistant glass is a crucial decision.

It's important to know that the product specified and installed will perform as intended in a fire. That's why you should specify the Pilkington range. Pilkington has consistently invested in the development and testing of its range of fire-resistant glass so you know you can rely on it.

Pilkington **Pyrostop**™.
National Gallery, Dublin.

When it comes to fire-resistant glass, Pilkington is the name to trust. We have been at the forefront of fire-resistant glass innovation since 1896 when we first introduced wired glass. Our objective is to continue to offer high performance and high quality products that can be relied upon in a fire. The current Pilkington range of fire-resistant glass is designed to do exactly that, meeting the UK regulatory requirements for integrity only or integrity with insulation.

Choosing the right glass for the right application is made easier with Pilkington. Pilkington **Pyrostop**™, Pilkington **Pyrodur**™, Pilkington **Pyrodur**™ Plus and Pilkington **Pyroshield**™ are designed to provide outstanding fire performance with impact safety (where applicable). They can also be combined with other products from the Pilkington range to provide additional features such as energy management or noise control. With our ongoing commitment to testing, technical innovation, quality, reliability and consistency, you can put your trust in Pilkington.

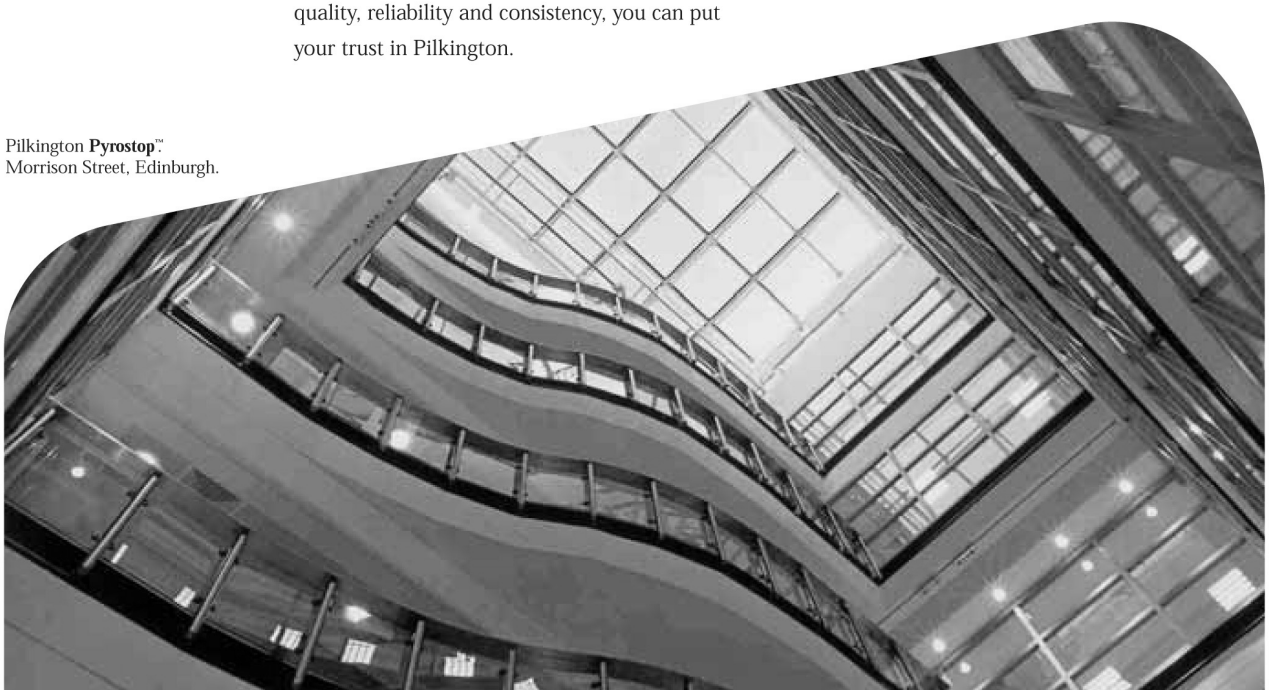
At Pilkington we believe that where fire safety is concerned, standard fire tests alone are not sufficient, nor are they the only way to substantiate performance claims. We devote a lot of effort to product design, production control, R&D, product evaluation and internal testing to ensure that the products consistently live up to performance demands.

To give you absolute confidence, we also continually put our products to the test, in a wide variety of sizes, configurations, applications and glazing systems.

Our products are third party audited and certified at the point of manufacture under independent schemes. We also carry out our own internal product testing programmes for fire performance, including impact safety, solar and acoustic testing, backed up by a major investment in technical resource that is only possible from a global company of international renown and experience.

The pan-European standards are replacing national standards. Pilkington has been supportive in the development of these standards, and our product range offers high and consistent levels of fire performance fully in line with the new standards.

Pilkington **Pyrostop**™.
Morrison Street, Edinburgh.



Fire Product Classification and Performance Definitions

Integrity

The ability of a specimen of a separating element to contain a fire to specified criteria for collapse, freedom from holes, cracks and fissures, and sustained flaming on the unexposed face.

Insulation

The ability of glazed screens or doors to limit the temperature rise on the non-fire side to an average of no more than 140°C and in any one position by no more than 180°C .

Radiant Heat

The ability of the element of construction to reduce the probability of transmission of fire as a result of significant radiated heat, either through the element or from its unexposed surface to adjacent materials on the non-fire side.

Classification

EN 13501-2 Fire classification of construction products and building elements.

Part 2: Classification using data from fire resistance tests, excluding ventilation services.

UK regulations have previously classified products in terms of integrity or integrity and insulation. The European definitions will be as follows:

- E Integrity
- I Insulation
- W Radiation

Therefore, example classifications may become:

- E 30 = 30 minutes Integrity
- EI 60 = 60 minutes Integrity and 60 minutes Insulation

Relevant Fire Test Standards

BS 476 Fire tests on building materials and structures.

Part 20: General requirements.

Part 22: Methods for the determination of the fire-resistance of non-loadbearing elements of construction.

BS EN 1363 Fire resistance tests.

Part 1: General requirements.

Part 2: Alternative and additional procedures.

BS EN 1364 Fire resistance tests for non-loadbearing elements.

Part 1: Walls.

Part 2: Ceiling (Non Load Bearing).

Part 4: Curtain Walling.

BS EN 1365

Part 2: Floors and roofs.

BS EN 1634 Fire resistance tests for door and shutter assemblies.

Part 1: Fire doors and shutters.

Relevant Impact Safety Test Standards

BS 6206 specification for impact performance requirements for flat safety glass & safety plastics for use in buildings.

BS EN 12600 : 2002 Glass in building – pendulum test. Impact test method and classification for flat glass.

Pilkington **Pyrodur**™ Plus is the ideal choice for internal use in hospitals, schools, offices and many other public places.

Pilkington **Pyrostop**™
Kensington Village, London.

Integrity and Insulation

Pilkington **Pyrostop**™

The clear alternative to a solid fire wall, this combines a high level of fire performance with impact safety to offer flexibility in a wide variety of applications.

By using special interlayers, these combine integrity and heat insulation, to limit the transmission of conductive and radiant heat with a clear glass. In case of fire the interlayer reacts to heat and foams to provide an opaque barrier. Pilkington **Pyrostop**™ products are one of the first fire-resistant glass products to meet the current European fire and impact test standards.

Description

- A clear, multi-laminated fire-resistant glass, which both retains its integrity and fully insulates against heat transfer from a fire.
- Thicknesses vary from 15 to 62mm, depending on the level of fire protection.
- Thicker products in the range based uniquely on Pilkington **Optiwhite**™ high light transmission glass to give good transparency.
- Clarity, a choice of thicknesses and options for decorative effects, e.g. sandblasting, make it ideal for a wide range of applications.
- Forms an opaque barrier against flames, hot gases and heat during a fire.

Pilkington **Pyrostop**™
Midsummer Boulevard, Milton Keynes.

Performance

- Restricts the spread of flames, hot gases and heat.
- Offers up to 120 minutes integrity and insulation in suitable glazing systems.
- Provides impact safety up to Class A to BS 6206 and Class 1(B)1 to BS EN 12600 : 2002.
- Pilkington **Pyrostop**™ also has excellent noise reduction properties.
- Versions are available for up to 180 minutes performance and for particularly intense fire situations when exposed to the hydrocarbon test curve, such as in oil field installations.

Benefits

- Readily available direct from Pilkington or through a national network of independent stockists.
- Suitable for a wide range of frame designs and systems.
- Tested and approved with most reputable fire-resistant glazing gaskets and sealants.
- Independently approved for use in a wide range of applications under the Certifire Scheme reference CF328.
- May be used in conjunction with sprinkler systems.

Pilkington **Pyrostop**™
Radisson Hotel, Sligo.

Integrity with some Insulation

Pilkington **Pyrodur**™ and Pilkington **Pyrodur**™ Plus.

By using fewer of the same special interlayers in Pilkington **Pyrostop**™, these combine integrity with some heat insulation, to limit the transmission of conductive and radiant heat with a clear glass. In case of fire the interlayer reacts to heat and foams to provide an opaque barrier. In exactly the same way as Pilkington **Pyrostop**™, Pilkington **Pyrodur**™ products are some of the first fire-resistant glass products to meet the current European fire and impact test standards.

Description

- A clear, multi-laminated fire-resistant glass.
- Clarity and options for decorative effects, e.g. sandblasting, make it ideal for use in doors and screens.
- Forms an opaque barrier against flames and hot gases, moreover it reduces the transfer of radiant heat significantly.
- An integrity only glass with some insulation performance and impact safety.

Performance – Pilkington **Pyrodur**™

- Restricts the spread of flames and hot gases, moreover it partially reduces the transfer of radiant heat.
- Nominal 10mm (types 30-201 and 60-10) and 13mm (type 60-20) thicknesses, containing two interlayers and one safety impact protection interlayer.
- Offers up to 60 minutes integrity, together with some heat insulation in suitable glazing systems.
- Provides impact safety up to Class B to BS 6206 and Class 1(B)1 to BS EN 12600 : 2002.
- Suitable for both internal and external applications.

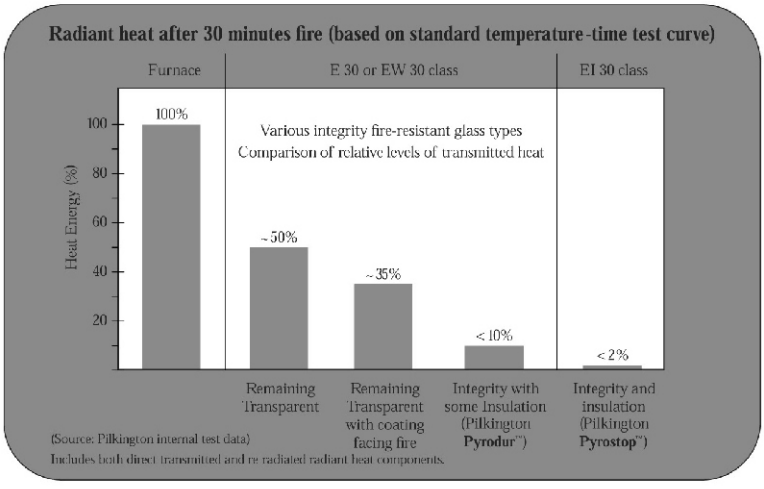
Performance – Pilkington **Pyrodur**™ Plus

- Restricts the spread of flames and hot gases, and reduces the transfer of radiant heat.
- Ideal for internal glazing applications with its nominal 7mm thickness, containing one purpose designed interlayer.
- Offers 30 minutes integrity, with heat insulation exceeding 15 minutes and exceptionally low levels of transmitted radiant heat.
- Provides impact safety up to Class B to BS 6206 : 1981 and Class 2 (B) 2 to BS EN 12600 : 2002 (ref TNO TPD), i.e. it behaves as a laminated glass under impact.
- The narrow 7mm thickness makes it a natural choice for internal glazing applications such as fire doors and partitions.

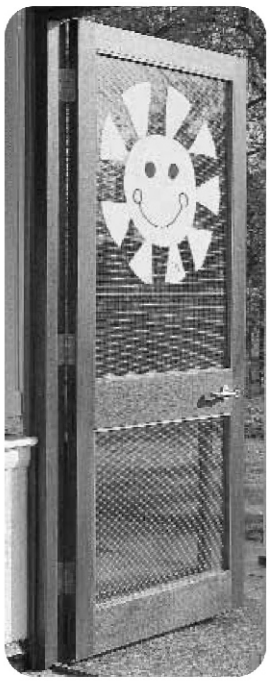
Pilkington **Pyrodur**™ Plus.
Harbour Hotel, Co. Galway.

Benefits

- Readily available direct from Pilkington or through a national network of independent specialist stockists.
- Tested and approved with a wide range of fire-resistant glazing gaskets and sealants.
- Independently approved for use in a wide range of applications under the Certifire Scheme reference CF328.
- Whilst there are no requirements in UK standards or regulations for insulation less than 30 minutes, the full insulation for a shorter period achieved by Pilkington **Pyrodur**™ and Pilkington **Pyrodur**™ Plus could prove invaluable during evacuation of a building.



Controlling radiant heat is a significant factor in saving lives as well as an important mechanism influencing the spread of fire. Although radiant heat reduction is not a requirement in UK regulations, comparison of transmitted radiant heat levels does provide a ready means of comparing different integrity glazings.
It should be especially considered for large glazed areas where the levels of radiant heat passing through can be dangerously high.



Pilkington **Pyroshield**™ Safety.
St Mary's & St Thomas Church of England School, St Helens.

Integrity only, or 'non-insulating'

Pilkington **Pyroshield**™
and Pilkington **Pyroshield**™ Safety.

The original fire-resistant glass, and still the most popular, thanks to its long track record in fire testing, exceptional value for money and ease of handling, stocking and glazing.

Description

- A monolithic, wired glass providing integrity fire protection, even in softwood frames.
- Available in clear or textured versions, for obscuration or privacy respectively.
- An integral wire mesh incorporated within the glass effectively holds the product together in case of thermal shock caused by fire.
- A thicker gauge of wire mesh is used to produce an impact safety version: Pilkington **Pyroshield**™ Safety.

Performance

- Meets European fire test standards.
- Restricts the spread of flames and hot gases.
- Offers up to 120 minutes integrity in specialist steel frames and up to 60 minutes in timber frames when tested to BS 476 Part 22.
- Maintains integrity even when fractured or sprayed with water.
- Safety version provides impact safety to Class C of BS 6206.
- Successfully tested in very large pane sizes, up to 1800mm x 2940mm.
- One of the most extensively used fire-resistant products in the world.

Benefits

- Readily available and easy to handle, stock and cut.
- Suitable for internal and external applications.
- Tested and approved with a wide range of fire-resistant glazing gaskets and sealants.
- Independently approved for use in a wide range of applications under the Certifire Scheme.
- Internal single glaze is comparable to a normal double glazed unit for sound insulation.

Choosing the right glass for your application

It is extremely important to make sure you specify and use the right product for the right application.

Our highly experienced specialist sales, technical teams and useful support materials can give you all the help and guidance you need from the outset.

Pilkington Specifire

The Pilkington Specifire incorporates all the information you need to choose the right product for your application.

By answering a series of questions you are taken to a screen highlighting the product, its properties and performance and details of its fire testing pedigree. The disc also incorporates copies of all Pilkington's fire test summaries and details of compatible sealant materials.

Contact

For further technical assistance phone our helpline on 01744 692000, e-mail us at pilkington@respond.uk.com or call any of our specialists around the UK and Ireland.

Anders Glass Limited, Manchester
0161 736 2487/8

Float Glass Industries Limited, Manchester
0161 946 8000

Glas-Seal (N.I.) Limited, Co. Down
028 9756 2932

Nicholls & Clarke Glass Limited, London
0208 986 6212

Glazing systems

Fire-resistant glass will only perform as intended when it is correctly installed with appropriate glazing materials in a suitable fire-resistant frame. For all fire-resistant glazing, the whole assembly must function as an integral system – that is the glass together with the frame, beads, bead fixings, glazing materials and frame fixings all working together with absolute compatibility.

The most common framing materials are timber or steel. However, other materials such as aluminium, concrete and gypsum board have been used in fire-resistant glazed screens. Examples of typical glazing details are shown in the figures.

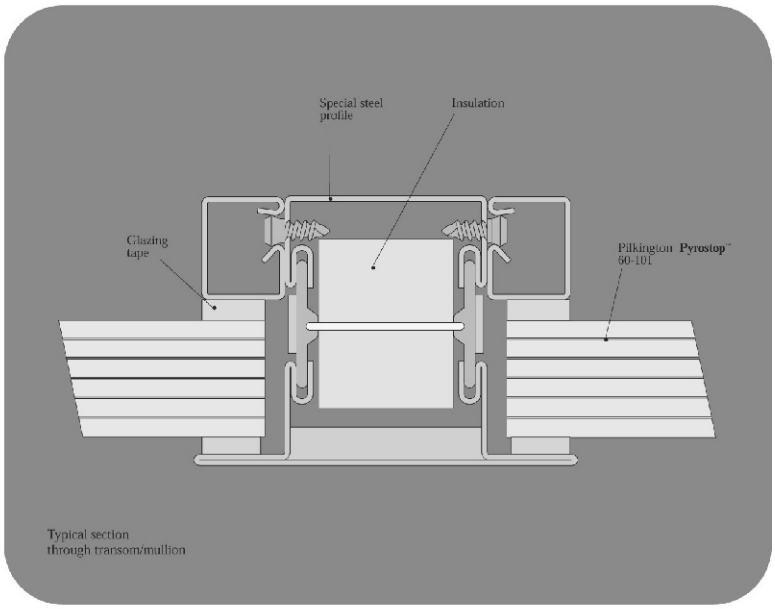
For the right choice of framing system and glass, it is important to advise at specification stage whether the application is an internal or external one.

Steel

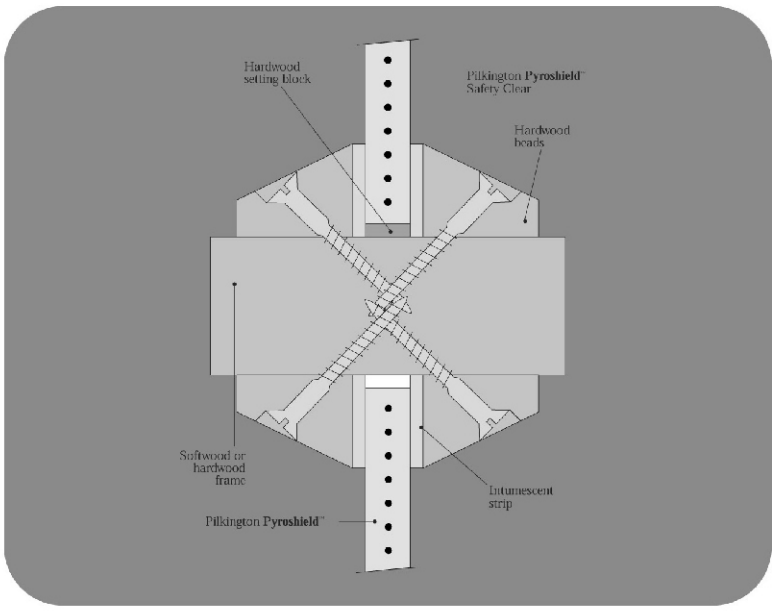
- To avoid the more than critical deflection usually associated with steel when it's exposed to fire, we only test our glass in proprietary fire-resistant steel framing systems.
- For full insulation fire resistance, thermal insulation material is usually incorporated into the frame design.
- Glazing materials are usually intumescent or ceramic fibre.
- Using Pilkington **Pyrostop**™ or Pilkington **Pyroshield**™ steel frames can achieve up to 120 minutes fire resistance.

Timber

- Can be either hardwood or softwood (over a range of densities).
- For maximum integrity, chamfered beads should be attached with long wooden screws driven at an angle.
- The gap between beads and glass should be filled with an appropriate glazing material, such as an intumescent gasket or non-combustible glazing tape.
- Well designed timber frames can achieve over 60 minutes integrity.



Pilkington **Pyrostop**™ in Multi-pane Steel Screen. 60 minutes integrity and 60 minutes insulation. Fire Test Reference: WARRES 113978.



Pilkington **Pyroshield**™ Safety Clear in Softwood Timber Screen. 30 minutes integrity. Fire Test Reference: WARRES 70068.

Fire-Resistant Glass Range
Technical Information

Fire Performance Table for Timber Frames

This table provides a quick reference guide only. For further details and specifications please consult Pilkington or a member of our network of independent stockists.

Performance	Wired or Clear	Fire Resistance (mins)		Glass Type	Fire Test Evidence and Recommended Maximum Sizes[a]	
					Timber Frame[b]	
		Integrity	Insulation		Doors	Screens[c]
Integrity and Insulation	Clear	60[d]	30	15mm Pilkington **Pyrostop**™ 30-10 Internal Grade	CF328[l] Max area 1.11m² Max w. 630 or Max h. 1790	CF328[l] Max area 5.25m² Max w. 2300 or Max h. 3000[e]
		60[d]	30	18mm Pilkington **Pyrostop**™ 30-20 External Grade	CF328[l] Max area 1.11m² Max w. 630 or Max h. 1790	CF328[l] Max area 5.25m² Max w. 2300 or Max h. 3000[e]
		60[d]	30	29mm Pilkington **Pyrostop**™ 30-15 Internal Grade IGU[f] 32mm Pilkington **Pyrostop**™ 30-25 External Grade IGU[f]	–	CF328[l] Max area 3.43m² Max w. 1850 or Max h. 2850
		60	60	23mm Pilkington **Pyrostop**™ 60-101 Internal Grade	RF 05035 793 x 1791	CF328[l] Max area 5.01m² Max w. 1879 or Max h. 2500[e]
		60	60	27mm Pilkington **Pyrostop**™ 60-201 External Grade	–	CF328[l] Max area 5.01m² Max w. 1879 or Max h. 2500[e]
		60	60	37mm Pilkington **Pyrostop**™ 60-151 Internal Grade IGU[g] 41mm Pilkington **Pyrostop**™ 60-251 External Grade IGU[g]	–	CF328[l] Max area 3.53m² Max w. 1879 or Max h. 2500
		60	60	51mm Pilkington **Pyrostop**™ 60-161 S Internal Grade IGU[h]	–	RF04017 Max w. 1220 x Max h. 2470
Integrity with some Insulation	Clear	30	0[i]	7mm Pilkington **Pyrodur**™ Plus 30-104 Internal Grade	CF328[l] Max area 1.95m² Max w. 950 x Max h. 2050	CF328[l] Max area 3.67m² Max w. 1093 or Max h. 2050[e]
		30	0[i]	10mm Pilkington **Pyrodur**™ 30-201 External Grade	CF328[l] Max area 2.16m² Max w. 965 or Max h. 2240	CF328[l] Max area 4.47m² Max w. 2114 or Max h. 2523[e]
		30	0	24mm Pilkington **Pyrodur**™ 30-251 External Grade IGU[j]	–	CF328[l] Max area 4.47m² Max w. 2114 or Max h. 2523
		60	0[i]	10mm Pilkington **Pyrodur**™ 60-10 Internal Grade	RF 05036 792 x 1790	RF 05036 850 x 1965
		60	0[i]	13mm Pilkington **Pyrodur**™ 60-20 External Grade	CF328[l] Max area 1.06m² Max w. 647 or Max h. 2017	C82442 1400 x 2000
Integrity only	Wired	30	0	6mm Pilkington **Pyroshield**™ Clear	C81232 - less than 0.5m² small dim < 250mm	C81232 1170 x 3000[k]
		30	0	7mm Pilkington **Pyroshield**™ Texture	C81232 - less than 0.5m² small dim < 250mm	C81232 1170 x 3000[k]
		30	0	6mm Pilkington **Pyroshield**™ Safety Clear	C81232 900 x 3000	C81232 1400 x 3000[k]
		30	0	7mm Pilkington **Pyroshield**™ Safety Texture	C81232 900 x 3000	C81232 1170 x 3000[k]
		60	0	6mm Pilkington **Pyroshield**™ Clear	C81232 - less than 0.5m² small dim < 250mm	C81232 1170 x 3000[k]
		60	0	7mm Pilkington **Pyroshield**™ Texture	C81232 - less than 0.5m² small dim < 250mm	C81232 1170 x 3000[k]
		60	0	6mm Pilkington **Pyroshield**™ Safety Clear	C81232 900 x 3000	C81232 1400 x 3000[k]
		60	0	7mm Pilkington **Pyroshield**™ Safety Texture	C81232 900 x 3000	C81232 1170 x 3000[k]

a Maximum tested size does not necessarily relate to maximum fire resistance
b Refer to fire test summaries for frame details
c Use Pilkington **Pyroshield**™ Safety for areas subject to Approved Document N requirements. i.e. low level glazing and Pilkington **Pyroshield**™ information from WFRC C81232
d Only achieved in this specific test
e Maximum recommended sizes are close to maximum available stock sizes so should only be specified following consultation with Pilkington Technical Helpline
f 15mm (30-15) or 18mm (30-25) Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
g 23mm (60-151) or 27mm (60-251) Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
h 23mm Pilkington **Pyrostop**™ / 22mm spacer with integral blind / 6mm non-fire rated glass
i There is no requirement in UK standards or regulations for insulation of less than 30 minutes, however these products achieve full insulation for a short period of time and remain opaque throughout the test
j 10mm Pilkington **Pyrodur**™ / 8mm steel spacer / 6mm non-fire rated glass
k Hardwood
l Refer to Pilkington Technical Helpline when considering the use of evidence based on Certifire Approvals

Certifire certification can be viewed at www.wfrc.co.uk/testing.htm

NOTE: The Pilkington fire-resistant glass range holds more than 100 official test approvals, including single glazed and IGU applications. Details can be provided on request. Summary of Physical Data can be found on page 3. Please refer to our published fire test summaries for individual details.

Fire Performance Table for Steel Frames

Performance	Wired or Clear	Fire Resistance (mins)		Glass Type	Fire Test Evidence and Recommended Maximum Sizes[a,b]	
					Steel Frame[d]	
		Integrity	Insulation		Doors	Screens[d]
Integrity and Insulation	Clear	30	30	15mm Pilkington **Pyrostop**™ 30-10 Internal Grade	–	CF328[p] Max area 5.25m² Max w. 2157 or Max h. 3000[b]
		60[e]	30	15mm Pilkington **Pyrostop**™ 30-10 Internal Grade	–	CF328[p] Max area 3.43m² Max w. 1852 or Max h. 2860
		60[e]	30	18mm Pilkington **Pyrostop**™ 30-20 External Grade	–	CF328[p] Max area 3.43m² Max w. 1852 or Max h. 2860
		60	30	29mm Pilkington **Pyrostop**™ 30-15 Internal Grade IGU[f] 32mm Pilkington **Pyrostop**™ 30-25 External Grade IGU[f]	–	CF328[p] Max area 3.43m² Max w. 1850 or Max h. 2820
		60	60	23mm Pilkington **Pyrostop**™ 60-101 Internal Grade	CF328[p] Max area 1.79m² Max w. 1338 or Max h. 2280	Warres 113978 1495 x 2895
		60	60	51mm Pilkington **Pyrostop**™ 60-161 S Internal Grade IGU[g]	–	Warres 110738 Max w. 1140 x Max h. 2390
		60	60	27mm Pilkington **Pyrostop**™ 60-201 External Grade	CF328[p] Max area 1.79m² Max w. 1338 or Max h. 2280	CF328[p] Max area 4.13m² Max w. 2000 or Max h. 3000
		90	90	46mm Pilkington **Pyrostop**™ 90-100 Internal Grade IGU[h]	–	CF328[p] Max area 2.8m² Max w. 1400 x Max h. 2000
		90	90	50mm Pilkington **Pyrostop**™ 90-100 Internal Grade IGU[i]	–	Warres 57296 755 x 988
		90	90	53mm Pilkington **Pyrostop**™ 90-200 External Grade IGU[j]	–	CF328[p] Max area 2.8m² Max w.1400 x Max h.2000
		120	120	52mm Pilkington **Pyrostop**™ 120-104 Internal Grade IGU[k]	–	CF328[p] Max area 3.57m² Max w. 1889 or Max h. 2520
		120	120	58mm Pilkington **Pyrostop**™ 120-104 Internal Grade IGU[l]	–	CF328[p] Max area 3.57m² Max w. 1889 or Max h. 2520
		120	120	62mm Pilkington **Pyrostop**™ 120-201 External Grade IGU[m]	–	CF328[p] Max area 3.57m² Max w. 1889 or Max h. 2520
Integrity with some Insulation	Clear	30	0[n]	7mm Pilkington **Pyrodur**™ Plus 30-104 Internal Grade	CF328[p] Max area 2.19m² Max w. 1069 x Max h. 2050	CF328[p] Max area 2.86m² Max w. 1690 or Max h. 2050
		30	0[n]	10mm Pilkington **Pyrodur**™ 30-201 External Grade	CF328[p] Max area 2.58m² Max w. 1069 or Max h. 2415	CF328[p] Max area 6.0m² Max w. 2561 or Max h. 3000
		30	0[n]	24mm Pilkington **Pyrodur**™ 30-251 External Grade IGU[o]	–	CF328[p] Max area 3.75m² Max w. 2417 or Max h. 3000
		60	0[n]	10mm Pilkington **Pyrodur**™ 30-201 External Grade	–	Warres 112856 1430 x 2905
		30	0[n]	13mm Pilkington **Pyrodur**™ 60-20 External Grade	–	CF328[p] Max area 3.67m² Max w. 2561 or Max h. 3000
		60	0[n]	13mm Pilkington **Pyrodur**™ 60-20 External Grade	–	CF328[p] Max area 2.85m² Max w. 1688 or Max h. 2033
Integrity only	Wired	30	0	6mm Pilkington **Pyroshield**™ Clear	C81232 - less than 0.5m² small dim < 250mm	C81232 1760 x 3000
		30	0	7mm Pilkington **Pyroshield**™ Texture	C81232 - less than 0.5m² small dim < 250mm	C81232 1760 x 3000
		30	0	6mm Pilkington **Pyroshield**™ Safety Clear	C81232 900 x 3000	C81232 1760 x 3000
		30	0	7mm Pilkington **Pyroshield**™ Safety Texture	C81232 900 x 3000	C81232 1760 x 3000
		60	0	6mm Pilkington **Pyroshield**™ Clear	–	C81232 1170 x 3000
		60	0	7mm Pilkington **Pyroshield**™ Texture	–	C81232 1170 x 3000
		60	0	6mm Pilkington **Pyroshield**™ Safety Clear	C81232 900 x 3000	C81232 1170 x 3000
		60	0	7mm Pilkington **Pyroshield**™ Safety Texture	C81232 900 x 3000	C81232 1170 x 3000
		90	0	6mm Pilkington **Pyroshield**™ Safety Clear	–	C81232 1000 x 3000
		90	0	7mm Pilkington **Pyroshield**™ Safety Texture	–	C81232 1000 x 2400
		120	0	6mm Pilkington **Pyroshield**™ Safety Clear	–	C81232 930 x 3000
		120	0	7mm Pilkington **Pyroshield**™ Safety Texture	–	C81232 1000 x 2100

a Maximum tested size does not necessarily relate to maximum fire resistance
b Maximum recommended sizes are close to maximum available stock sizes so should only be specified following consultation with Pilkington Technical Helpline
c Refer to fire test summaries for frame details
d Use Pilkington **Pyroshield**™ Safety for areas subject to Approved Document N requirements. i.e. low level glazing and Pilkington **Pyroshield**™ information from WFRC C81232
e Only achieved in this specific test
f 15mm (30-15) or 18mm (30-25) Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
g 23mm Pilkington **Pyrostop**™ / 22mm spacer with integral blind / 6mm non-fire rated glass
h 15mm Pilkington **Pyrostop**™ / 8mm steel spacer / 23mm Pilkington **Pyrostop**™
i 15mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
j 18mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
k 23mm Pilkington **Pyrostop**™ / 6mm steel spacer / 23mm Pilkington **Pyrostop**™
l 23mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
m 27mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
n There is no requirement in UK standards or regulations for insulation of less than 30 minutes, however these products achieve full insulation for a short period of time and remain opaque throughout the test
o 10mm Pilkington **Pyrodur**™ / 8mm steel spacer / 6mm non-fire rated glass
p Refer to Pilkington Technical Helpline when considering the use of evidence based on Certifire Approvals

NOTE: The Pilkington fire-resistant glass range holds more than 100 official test approvals, including single glazed and IGU applications. Details can be provided on request. Summary of Physical Data can be found on page 3. Please refer to our published fire test summaries for individual details.

Physical Data

Glass Type	Product Code	Fire resistance Integrity	Fire resistance Insulation	Nominal Glass Thickness approx - mm	Light Transmission	Weight approx. kg/m²	Glass Thickness Tolerance approx. mm	Sound[b] reduction approx - dB	BS 6206 Impact[c]
Pilkington **Pyrostop**™	30-10	30	30	15	0.85	35.0	±1.0	38	B
Pilkington **Pyrostop**™ [d]	30-15	30	30	29	0.76	51.0	±2.0	38	B
Pilkington **Pyrostop**™	30-20	30	30	18	0.84	42.0	±1.0	38	A
Pilkington **Pyrostop**™ [e]	30-25	30	30	32	0.75	58.0	±2.0	39	A
Pilkington **Pyrostop**™	60-101	60	60	23	0.88	55.0	±2.0	40	A
Pilkington **Pyrostop**™ [f]	60-151	60	60	37	0.78	69.0	±3.0	41	A
Pilkington **Pyrostop**™ [g]	60-161 S	60	60	51	0.78	76.0	±3.0	42	A
Pilkington **Pyrostop**™	60-201	60	60	27	0.86	61.0	±2.0	41	A
Pilkington **Pyrostop**™ [h]	60-251	60	60	41	0.78	77.0	±2.0	41	A
Pilkington **Pyrostop**™ [i]	90-100	90	90	46	0.76	89.0	±3.0	42	A
Pilkington **Pyrostop**™ [j]	90-100	90	90	50	0.76	89.0	±3.0	42	A
Pilkington **Pyrostop**™ [k]	90-200	90	90	49	0.75	96.0	±3.0	43	A
Pilkington **Pyrostop**™ [l]	90-200	90	90	53	0.75	96.0	±3.0	43	A
Pilkington **Pyrostop**™ [m]	120-104	120	120	52	0.78	106.0	±3.0	42	A
Pilkington **Pyrostop**™ [n]	120-104	120	120	58	0.78	106.0	±3.0	43	A
Pilkington **Pyrostop**™ [o]	120-201	120	120	62	0.76	116.0	±3.0	44	A
Pilkington **Pyrodur**™ Plus	30-104	30	0	7	0.88	17.0	±1.0	35	B
Pilkington **Pyrodur**™	30-201	30	0	10	0.88	24.0	±1.0	36	B
Pilkington **Pyrodur**™ [p]	30-251	30	0	24	0.78	40.0	±2.0	38	B
Pilkington **Pyrodur**™	60-10	60	0	10	0.88	24.0	±1.0	35	C
Pilkington **Pyrodur**™	60-20	60	0	13	0.86	31.0	±1.0	38	B
Pilkington **Pyroshield**™ Clear		30	0	6	0.80	16.6	-0.+1.4	32	N/A
Pilkington **Pyroshield**™ Texture		30	0	7	0.79	16.7	+0.7	32	N/A
Pilkington **Pyroshield**™ Safety Clear		30	0	6	0.77	16.6	-0.+1.4	32	C
Pilkington **Pyroshield**™ Safety Texture		30	0	7	0.76	16.7	±0.7	32	C

a With reference to the relevant product standard
b R_W index (weight sound reduction) corrected for the human ear based on internal measurements
c BS 6206 classifies individual panes of glass only
d 15mm Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
e 18mm Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
f 23mm Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
g 23mm Pilkington **Pyrostop**™ / 22mm spacer with integral blind/ 6mm non-fire rated glass
h 27mm Pilkington **Pyrostop**™ / 8mm steel spacer / 6mm non-fire rated glass
i 15mm Pilkington **Pyrostop**™ / 8mm steel spacer / 23mm Pilkington **Pyrostop**™
j 15mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
k 18mm Pilkington **Pyrostop**™ / 8mm steel spacer / 23mm Pilkington **Pyrostop**™
l 18mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
m 23mm Pilkington **Pyrostop**™ / 6mm steel spacer / 23mm Pilkington **Pyrostop**™
n 23mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
o 27mm Pilkington **Pyrostop**™ / 12mm steel spacer / 23mm Pilkington **Pyrostop**™
p 10mm Pilkington **Pyrodur**™ / 8mm steel spacer / 6mm non-fire rated glass

Thermal Safety – The possibility of excessive thermal stress being developed in the glass due to solar radiation should be considered at all stages of design and construction. It is recommended that a thermal safety check is performed for all sloping installations or when used in insulating glass units or secondary glazing.

Handling & Storage – Glass should be stored in dry conditions and out of direct sunlight, stacked upright and fully supported in a manner which prevents the glass from sagging. It should be stood on edge on strips of wood, felt or other relatively soft material. Special care should be taken to protect the glass, especially the edges and the edge protection tape, from impact damage (knocks, abrasions and excessive local pressure). Upon receipt and before glazing, each glass should be checked for damage. Damaged glass should not be glazed. Water must not be allowed to reach the edges of stacked glass as it can be drawn between the plates by capillary action and cause damage which may affect fire performance. The glass must be protected from site contamination such as welding, cementatious, plaster products or adhesives.

Glazing and handling details are available on request.

Insulating glass units incorporating Pilkington fire-resistant glass have been successfully tested and combined with low-E glass help in meeting the requirements of Part L (England & Wales) and Part J (Scotland). Detailed glazing information can be found in our published fire test summaries. We recommend that glazing is carried out by a FIRAS accredited installer.

Further details – For technical advice, or to receive a copy of our general CD-ROM or the Pilkington Specifire Selection CD-ROM including all performance details, please call **01744 692000**.

This publication gives a general description of the product and materials. It is the responsibility of the users to ensure that their use is appropriate for any particular application and that such application complies with all relevant local and national legislation, standards, codes of practice and other requirements.

Pilkington plc and its subsidiaries hereby disclaim all liability howsoever arising from any error in or omission from this publication and all consequences of relying on it.
Pilkington **Pyrostop**™, Pilkington **Pyrodur**™, Pilkington **Pyrodur**™ Plus and Pilkington **Pyroshield**™ are trade marks of the Pilkington Group.

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3441 – March 2006

Norsound Acoustic Solutions

Tested with Flamebreak door cores

In partnership with Pacific Rim Wood Ltd

Norsound – The latest development in acoustic seals.

Norsound have developed a range of seals allowing the specifier / user to build high quality acoustic doorsets working within UK approved Document 'E' (Rw.29dB), and Building Bulletin 93 (Rw.30dB and Rw.35dB). The range offers low opening / closing forces together with minimal sight lines creating visually appealing doorsets working to the most demanding standards.

The use of Norsound products take the sound attenuating performance doorsets to new and higher levels. With the details outlined in this publication the latest acoustic requirements of Document 'E' together with Building Bulletin 93. can be comfortably achieved. This creates exciting opportunities for users to offer competitive solutions where continuous smoke seals, and acoustic performances are required.

The Norsound range of acoustic seals along with an extensive range of intumescent seals, fire rated glazing solutions and fire rated grilles are all available through:

Norseal Ltd, Norseal House,

5 Regents Drive, Prudhoe.

United Kingdom.

NE42 6PX

Tel 00 44 (0)1661 830088

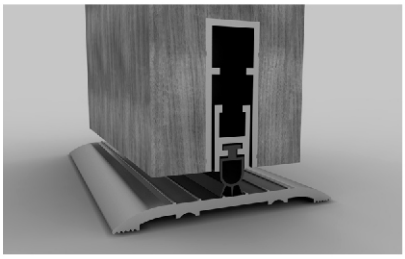
Fax 00 44 (0)1661 830 099

www.norseal.co.uk

email sales@norseal.co.uk

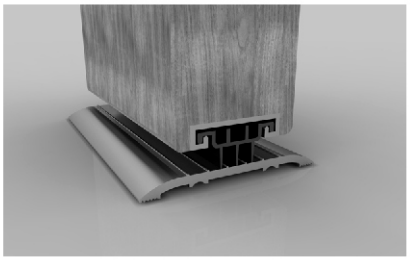
Norsound 710

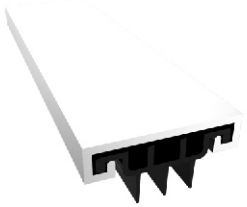
The Norsound 710 offers unique 'dual air pocket' technology creating optimum acoustic sealing together with low opening / closing forces for the door leaf.



Norsound 810

The Norsound 810 is a fully self levelling threshold seal which retracts into the bottom edge of the door on opening of the door leaf. The seal gasket only seals against a hard floor (or threshold plate) when the leaf is in its fully closed position. The seal carrier is operated when a button at the hanging stile position is depressed on contact with the frame jamb.





Norsound 850 / Norsound 615

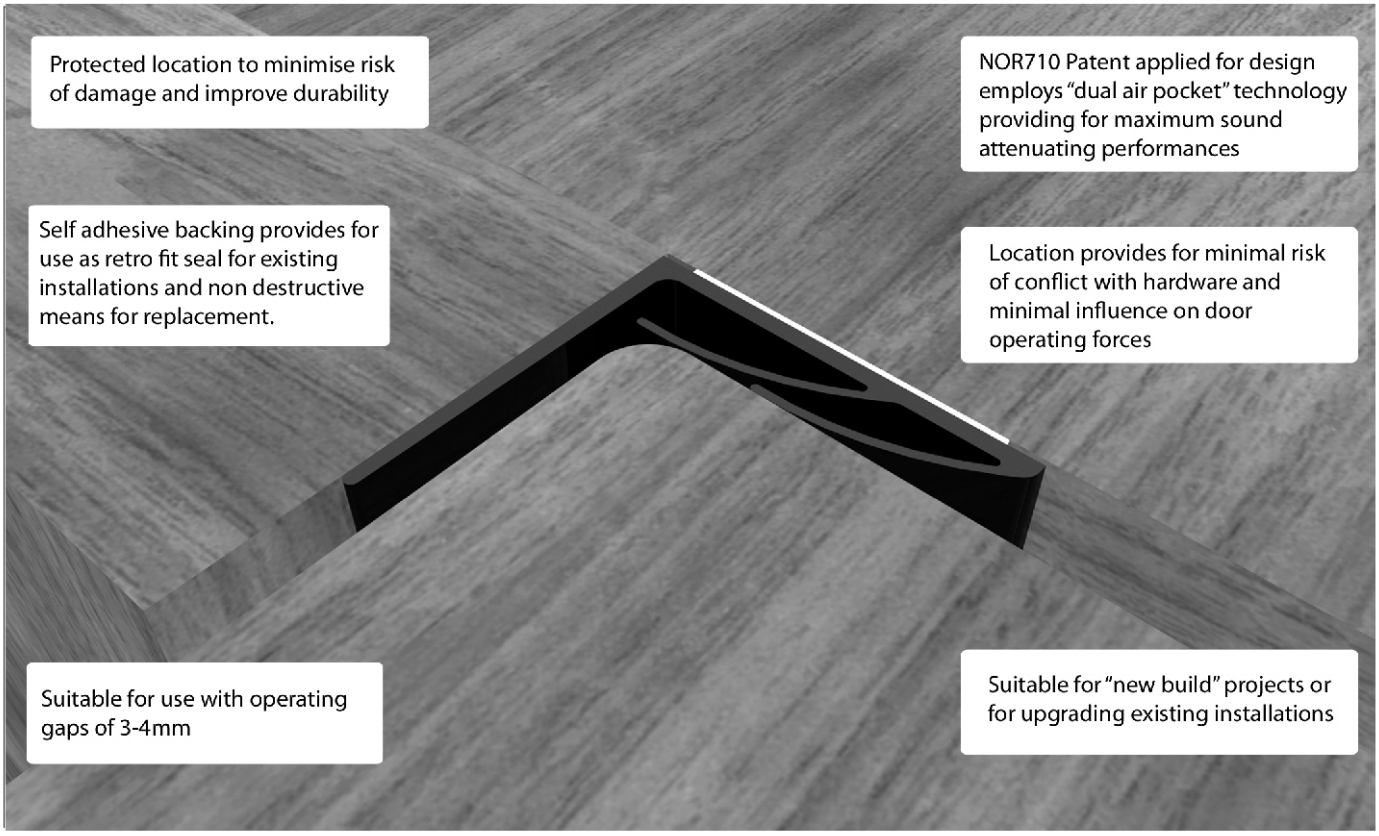
The Norsound 850 offers a non mechanical alternative for threshold sealing. The gasket design employs Norsound 'dual air pocket' technology to provide for optimum sound attenuating performances when used in conjunction with a Norsound Threshold plate.

Norsound Acoustic Seals

Norsound seals, available through Norseal Ltd, offer the market a unique range of seals available on an ex stock AM Next Working Day delivery. When used in conjunction with suitable door constructions Norsound seals provide for a competitive and versatile method for achieving acoustic performances up to and beyond Rw.35dB.

The Norsound range is unique in its 'dual air pocket' technology which acts in a similar manner to triple glazing, the seal blades create simple but effective barriers to prevent the passage of airborne sound. The Norsound 710 perimeter seal is a great example of this technology in use, the first blade offers a sound barrier, vibrating as the sound comes into contact and allowing a degree of sound to penetrate into the void behind it. Once the sound has been reduced the remainder of sound then is blocked by the second seal and onto the back blade, the results are truly impressive.

Under test the Norsound 710 seal was tried where, for test purposes only, the threshold was 'caulked' whilst the perimeter was sealed with the Norsound 710, the result was exactly the same as a 'fully caulked' door! Further, the Norsound 710 seal was tested without the use of a frame doorstop with a minimal loss of sound attenuating performance. These results, although not generally used in practice, are indicative the efficiency of the Norsound 710 that, quite simply did not allow any measurable airborne sound to pass through the doorset. The dual air pocket technology of the Norsound 710 is applied to other products in the Norsound range while still meeting design objectives for competitively priced products that are simple to install, even when fitted as up grade products to existing installations.



Norsound durability

Norsound have embarked on a third party 100,000 cycle test for the range once again proving the suitability for application.

Norsound – A Complete Range


NOR115

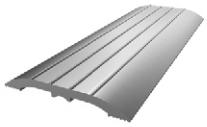

NOR250


NOR350


NOR400


NOR510


NOR610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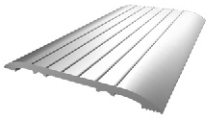
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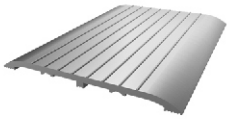
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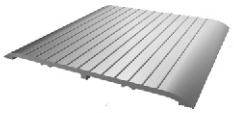
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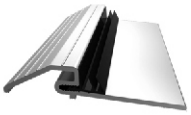
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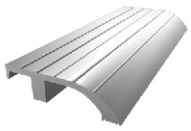

NOR695


NOR710


NOR710SR


NOR710FR


NOR720


NOR810


NOR810T


NOR810S


NOR810DB+


NOR815


NOR855


NOR850


WAVE

Norsound – Design criteria

Demanding applications were considered and applied in the development of the Norsound range of seals, the design criteria was met and exceeded in some cases, we also performed full scale testing. Some of the features and benefits of the Norsound range are as follows:

- Norsound seals provide the minimum sound attenuating performance requirements set out in Building Regulations (England & Wales) – Approved Documents 'E' and Building Bulletin 93 (Schools & Educational Establishments) Classrooms & Music Rooms when used in line with this publication. Although Norsound seals often exceed the minimum requirements.
- Norsound seals are located to provide continuous sealing, with minimal risk of conflict with hardware.
- Norsound seals are quick and easy to install with minimal influence on door operating forces.
- Norsound seals have been successfully tested to offer smoke sealing performances as defined by BS476 Part 31:1*.
- Norsound seals incorporate self extinguishing properties* for enhanced fire rated doorset performance.
- Where possible, Norsound seals are fitted in locations considered to be at minimal risk of damage.
- Norsound seals are designed to work in operating gaps as defined by reference to BS4787 Pt.1 but with a simple means of adjustment where it is necessary to seal larger gaps.
- Norsound threshold sealing options satisfy the requirements of Building Regulations – (England & Wales) – Approved Document 'M' (BS8300).
- Norsound seals are suitable for existing doorset applications with minimal intrusive influence on the existing doorset design.

*certain products apply

Norsound – Flame Retardancy – Designed for Fire Doors

The Norsound range incorporates the latest in flame retardant materials, without loss of gasket flexibility, specifically developed for Norsound. The flame retardant nature of the Norsound seal gaskets provides for a preferred choice when used in conjunction with fire doors. Indeed when tested they have demonstrated a potential to complement the fire door performance and may actually improve the ability to seal a door for fire, they do this by sealing the voids in the early stages of test restricting the passage of hot gasses from eroding the door / frame in advance of the activation of intumescent seals.

Norsound are tested to BS 476 Part 31:1 with 'continuous' smoke seals!

While designed primarily to meet increasing demands for efficient sound attenuating products, it was apparent that sealing systems that could effectively prevent the flow of airborne sound would also provide for an effective barrier to the passage of airborne particles i.e. smoke.

The Norsound range is supported with BS476 Section 31.1 related test evidence for smoke sealing applications. Norsound seals are located to avoid the need to interrupt seals to accommodate hardware fittings, thus providing for a continuous seal around the doorset.

Norsound threshold seals provide for a wide range of Building Regulations – (England & Wales) – Approved Document 'M' (BS8300) compliant design options for the sealing of thresholds as defined by reference to BS5588 (BS9999) for smoke sealed doorsets.

Norsound availablity

Norsound products are sourced through Norseal Ltd, the largest UK distributor for acoustic / fire related seals commanding the market for many years. The company has forged an enviable reputation as a competent quick and competitively priced supplier for the products it supplies. Originally founded some ten years ago the business principles have never changed: *service – service – service*. The company offers a full technical backup for UK specifiers and manufacturers.

The Norseal range covers all of the Norsound products together with being a major stockholder of door edge intumescent seals and intumescent glazing systems.

Norseal Ltd. Provides for a true 'one stop shop' for acoustic, fire and smoke seals held ex stock and delivered on an AM Next Working Day delivery as standard.

For further technical support please contact: Norsound on 01661 831 311

Norsound / Norseal - Proven Performance combined with ex-stock availability

Norseal Ltd.,
Norseal House,
5 Regents Drive,
Prudhoe,
Northumberland NE42 6PX
United Kingdom

Tel: 00 44 (0)1661 830088
Fax: 00 44 (0)1661 830099
e-mail: sales@norseal.co.uk
web: www.norseal.co.uk

NORSOUND
SPECIALISTS IN ACOUSTIC DOOR SEALS

Safehinge ALU Range - Integrated Finger Protection for Doors

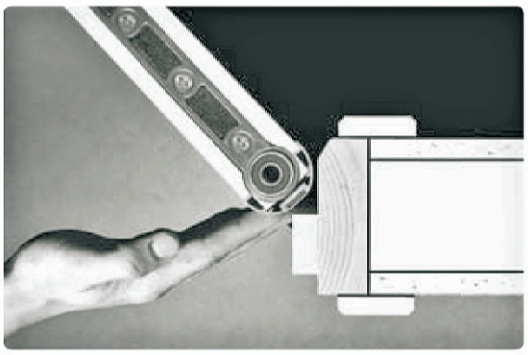
safehinge™

30,000 children trap and seriously injure their fingers in doors every year in the UK and 1,500 of these will require surgery.

Royal Society for the Prevention of Accidents

The Safehinge ALU range

Safehinge ALU eliminates any opportunity for finger trappings to occur by using a specialist pivot set and integrating a curved aluminium profile with the door. Clever design means there is no opportunity for wandering fingers to be trapped, which is without doubt the best way to protect against accidents: total prevention.



Ease of manufacture

Safehinge ALU is designed for efficient manufacturing. The Safehinge ALU range is compatible with both CNC and manual manufacturing techniques and can be incorporated into a doorset as easily as conventional butt hinges.

Install once

Safehinge ALU is designed for quick and easy installation. Our product offers installers on-site adjustability, that allows for building imperfections and enables fast, stress-free installation, ensuring outstanding results are achieved every time.

Technical performance

NFR/FD30/FD60 | SEVERE DUTY | UP TO 38dB | RAL COLOUR OPTIONS

Full technical details can be found online at www.safehinge.com

Save up to 75% on life costs

Retrofit hinge covers have limited durability and typically fail every 6 – 24 months, leading to regular replacements which incur substantial cost. Safehinge ALU is a durable solution to this issue. Installed once, it lasts the life of the door and will save 75% - around £500 per door - over the life of a school or hospital.

Why choose the Safehinge ALU range?

Education

- Improve safety for entire community who use flexible spaces in school buildings
- Embody best practice and create inspirational schools fit for the 21st century
- Save devolved budgets for pupil education, not replacing broken hinge covers
- Maximise value of your capital investment – Safehinge ALU will last the life of the door
- Protect local authorities against costly compensation claims

Healthcare

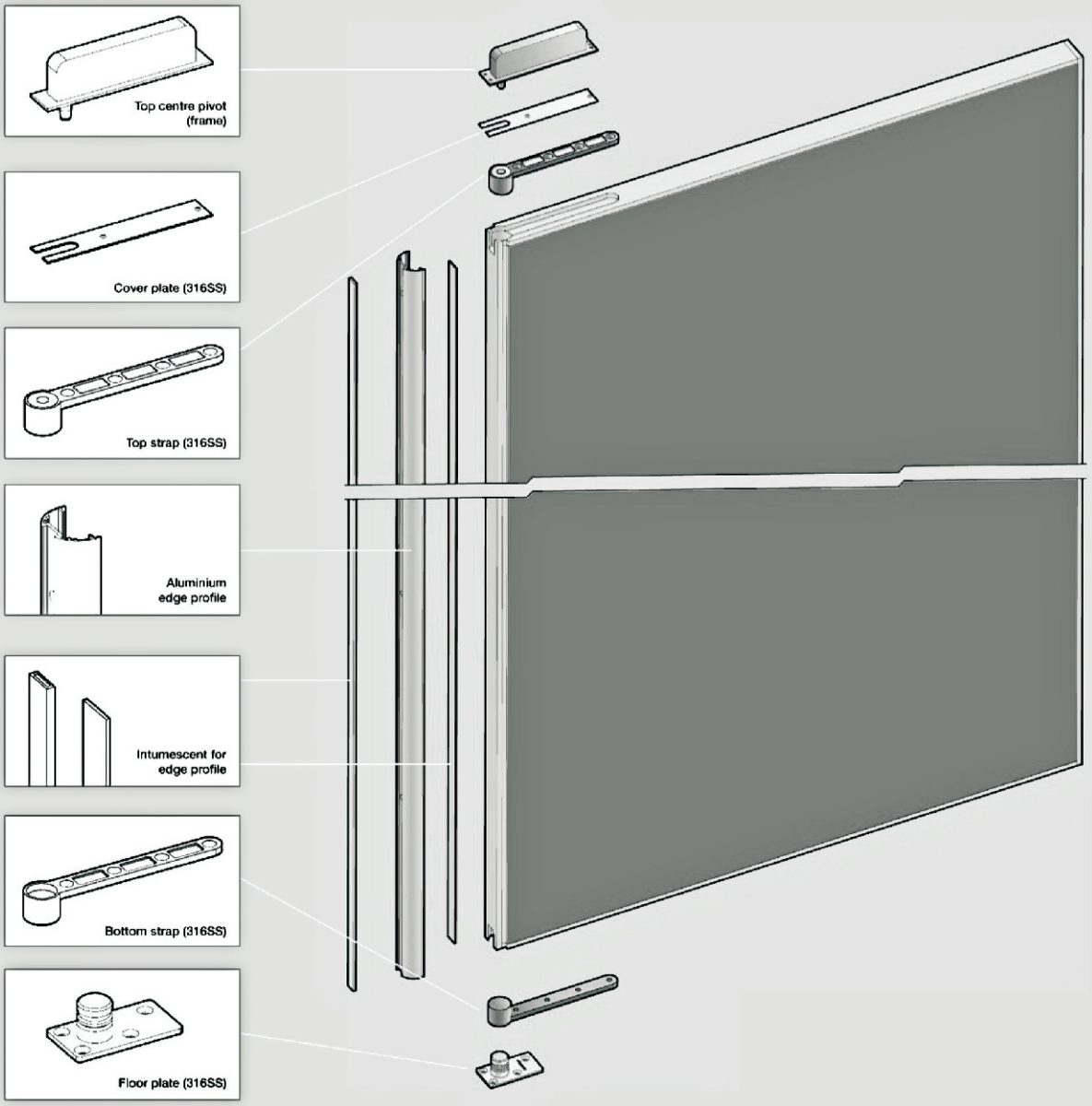
- Comply with HTM 58 recommendation of finger protection for doors
- Eliminate risk, provide total finger protection for vulnerable patients
- Combat Healthcare Associated Infections (HCAI) with wipe clean surface
- Specify durable finger protection that lasts the life of door
- Provide additional edge impact resistance with aluminium profile

Retail and Leisure

- Demonstrate unparalleled commitment to customer safety by using most effective finger protection
- Create outstanding, attractive environments for your customers
- Protect against negative publicity associated with finger trapping injuries
- Improve sustainability credentials by reducing landfill from broken hinge covers

Safehinge ALU range:

Safehinge ALU versions are available for 44 and 54mm thick doors for NFR/FD30/FD60 rating.



For further information and to order contact: