CERTIFICATE OF REGISTRATION

This is to certify that

Nelson Pine Industries Limited

Lower Queen Street, Richmond Nelson, 7020 New Zealand

complies with the requirements of

Forest Stewardship Council® - Chain of Custody Standard and Controlled Wood Standard

for the following scope of registration

Tracking of wood based material.
Product groups: W9.2 Laminated Veneer Lumber; W8.3.2. Fibreboard; W7.1 Peeled Veneer Sheets.
Claim: FSC Mix, FSC Controlled Wood.
Systems used: Volume Credit.
Standards: FSC-STD-40-004 v 2-1, FSC-STD-40-005 v2-1, FSC-STD-50-001 v1-2.

SAI Certificate No.:	CERT-0080074	Issue Date:	June 19, 2014
FSC Code:	SAI-COC-001290	Original Certification Date:	June 23, 2009
	SAI-CW-001290	Current Certification Date:	June 22, 2014
SAI File Number:	1618484	Certificate Expiry Date(1):	June 21, 2019
		Issue Number:	1

Chris Jouppi
President,
QMI-SAI Canada Limited

Samer Chaouk
Head of Policy, Risk and Certification
SAI Global Certification Services Pty Ltd

Certified System

FSC www.fsc.org

The mark of responsible forestry

FSC® A000519

Registered by:
SAI Global Certification Services Pty Ltd, 286 Sussex Street, Sydney NSW 2000 Australia with QMI-SAI Canada Limited, 20 Carlson Court, Suite 200, Toronto, Ontario M9W 7K6 Canada (SAI GLOBAL). This registration is subject to the SAI Global Terms and Conditions for Certification. While all due care and skill was exercised in carrying out this assessment, SAI Global accepts responsibility only for proven negligence. This certificate remains the property of SAI Global and must be returned to them upon request.
To verify that this certificate is current, please refer to the SAI Global maintains an On-Line Certification Register:
http://www.qmi-saiglobal.com/qmi_companies/

SAI GLOBAL
INFORM. INSPIRE. IMPROVE.

(1)The validity of this certificate shall be verified on www.info.fsc.org
The list of the products groups included in the scope of this certificate may be obtained from SAI Global Certification Services Pty Ltd upon request or found at www.info.fsc.org. This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC®-certified or FSC® Controlled Wood. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC® Claim is clearly stated on invoices and shipping documents.

FLAMEBREAK

FSC
www.fsc.org
FSC® A000525
The mark of responsible forestry

Soil Association CERTIFICATION

Certificate of Registration

This is to certify that

KSU BROMO MANDIRI KTI

has been certified in accordance with the requirements of the Forest Stewardship Council® A.C.
Using the FSC-STD-IDN-01-2013 Indonesia Natural, Plantations and SLIMF EN. Harmonised
and that **KSU BROMO MANDIRI KTI** of

Jl. Raya Bromo, Ngepung Village, Sukapura District, Probolinggo Regency, Province of East Java, INDONESIA

is the Group Manager for this Group Certificate and is hereby licensed to describe the management of the certified forest area as 'FSC® Certified' and is hereby licensed to use the FSC Logo on and sell as FSC certified all products which are listed on the attached product schedule which were sourced from the certified forest area.

Certificate Registration Code:	**SA-FM/COC-5493** Issue Number 1.0
Licence Code:	**FSC-C133562**
Issued By:	Soil Association Certification Limited South Plaza, Marlborough Street Bristol, BS1 3NX United Kingdom
Issue Date:	**4 January 2017**
Valid until the Renewal Date:	**3 January 2022** Subject to successful annual surveillance
Signed on behalf of Soil Association Certification	Kevin Jones **Kevin Jones, Head of Forestry**

Certificate of Registration

The mark of responsible forestry

This is to certify that

KSU ALAS MANDIRI KTI

"the certified forest area"
has been certified in accordance with the requirements of the
Forest Stewardship Council® A.C.
Using the FSC-STD-IDN-01-2013 Indonesia Natural, Plantations and SLIMF EN. Harmonised
and that

Koperasi Alas Mandiri KTI

of

Jl. Tanjung Tembaga Baru Probolinggo, JAWA TIMUR, INDONESIA

is the Group Manager for this Group Certificate and is hereby licensed to describe the management of the certified forest area as 'FSC® Certified' and is hereby licensed to use the FSC Logo on and sell as FSC certified all products which are listed on the attached product schedule which were sourced from the certified forest area.

This certificate is only valid for sale of FSC products when accompanied by a current product schedule. Validity of this certificate may also be verified by checking the FSC database: www.fsc-info.org or by contacting Woodmark: wm@soilassociation.org

Certificate Registration Code:	**SA-FM/COC-002083** **Issue Number:** 2.1
Issued By:	Soil Association Certification Ltd, Woodmark Programme South Plaza, Marlborough Street Bristol, BS1 3NX United Kingdom
Issue Date:	22 December 2013
Valid until the Renewal Date:	21 December 2018
Reissued with new standard:	11 June 2015 *Subject to successful annual surveillance*
Signed on behalf of Soil Association Certification	Kevin Jones Kevin Jones Head of Forestry

CERTIFICATE

for

SUMITOMO FORESTRY (SINGAPORE) LTD

55 Market Street #11-02, Singapore, 048941, Singapore

CERTIFICATE SCOPE

Certificate Type: *Single Chain of Custody*
Standard(s): *FSC-STD-40-004 V3-0*
Product Group(s): *Roundwood (logs); Wood chips; Wood pellets; Solid wood boards; Raw wood for parquet flooring; Dimensional lumber, finished; Non-dimensional timber and lumber; Boards, finished; Peeled veneer; Sliced veneer; Plywood; Particleboard; Fibreboard; Finger jointed wood; Laminated veneer lumber (LVL); Solid-wood board; Glued laminated timber (GLULAM); I-joists, I-beams; Composite board*
Valid from *January 28, 2018* **to** *January 27, 2023*
Certificate Registration Code: *RA-COC-005542 / RA-CW-005542*
FSC® License Code: *FSC-C018718*
Certificate Issue Number: *IN-2018-1*

Additional details regarding the scope, including a full list of products and species are available at info.fsc.org.

Laura Terrall, Director, Certification

Rainforest Alliance
233 Broadway, 28th Floor
New York, NY 10279 USA

Rainforest Alliance is an FSC accredited certifier FSC® A000520

The validity of this certificate shall be verified on info.fsc.org. This certificate does not constitute evidence that a particular product supplied by the certificate holder is FSC certified and/or FSC Controlled Wood. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents.

This certificate is the property of Rainforest Alliance. This certificate and all copies or reproductions of this certificate shall be returned or destroyed if requested by Rainforest Alliance.

FSC www.fsc.org FSC® A000520 The mark of responsible forestry

RAINFOREST ALLIANCE CERTIFIED

CERTIFICATE OF REGISTRATION

This is to certify that

PT. KUTAI TIMBER INDONESIA
Jl. Tanjung Tembaga Baru
Pelabuhan Probolinggo 67201
Jawa Timur
Indonesia

012

has been audited and found to meet the requirements of standard
ISO 14001:2015 Environmental Management System

Scope of certification

Manufacture of Plywood, Woodworking, and Particle Board

Certificate number: 091

Issue number: 2017-01

Certificate start date: 16 September 2016

Certificate expiry date: 15 September 2019

Date of initial certification: 16 September 2013

Karen Prendergast
Sector Director - Certification
Exova BM TRADA

FLAMEBREAK

CERTIFICATE OF REGISTRATION

This is to certify that

PT. KUTAI TIMBER INDONESIA
Jl. Tanjung Tembaga Baru
Pelabuhan Probolinggo 67201
Jawa Timur
Indonesia

012

has been audited and found to meet the requirements of standard
ISO 9001:2015 Quality Management System

Scope of certification
Manufacture of Plywood, Woodworking, and Particle board

Certificate number: 6232

Issue number: 2017-01

Certificate start date: 16 September 2016

Certificate expiry date: 15 September 2019

Date of initial certification: 16 September 2013

Date of re-certification: 2013

Karen Prendergast
Sector Director - Certification
Exova BM TRADA

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No. SC070429.

This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. Further clarification regarding the scope of this certificate and verification of the certificate is available through Exova BM TRADA or at the above address or at www.exovabmtrada.com

The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012

CERTIFICATE OF REGISTRATION

This is to certify that

PT Kutai Timber Indonesia
Jl. Tanjung Tembaga Baru,
Pelabuhan Probolinggo,
East Java,
Indonesia

has been audited and found to meet the requirements of standard(s) **FSC-STD-50-001 (Version 1.2) EN and FSC-STD-40-004 (Version 2.1) EN** for **FSC® Chain of Custody Certification**

Scope of certification

Manufacture and sales of plywood, door blank, solid wood board, glued laminated timber and particle board made from FSC certified timber and sales of FSC certified round wood

Products:
Plywood
Doors and door frames
Solid wood board
Glued laminated timber
Particle board
Round wood

Certificate number: TT-COC-002009

Issue number: 2016-01

Certificate start date: 10 January 2015

Certificate expiry date: 9 January 2020

Date of initial certification: 10 January 2005

Tom Johnston
General Manager
Central Certification Services

REGISTRATION CERTIFICATE

mutu certification international

PT MUTUAGUNG LESTARI, operating as Independent Assessment and Verification Agency declares that,

PT KUTAI TIMBER INDONESIA

Unit Probolinggo : Jl. Tanjung Tembaga Baru, Kelurahan Mayangan, Kec. Mayangan, Kota Probolinggo, Jawa Timur, INDONESIA.

Unit Lumajang : Desa Jarit, Kecamatan Candipuro, Kabupaten Lumajang, Provinsi Jawa Timur,INDONESIA.

Complies with the criteria and indicators for Timber Legality Verification according to Director General of Sustainable Production Forest Management Regulation Number : P.14/PHPL/SET/4/2016 dated April 29, 2016 concerning Standards and Guidelines on Assessment of Performance in Sustainable Production Forest Management and Timber Legality Verification Annex 2.5. Timber Legality Verification Standard in the Industry License (IUIPHHK and IUI), for the scope as specified in the appendix.

Arifin Lambaga, *President Director*
Signed on behalf of LVLK PT Mutuagung Lestari
Jl. Raya Bogor KM. 33.5 No. 19
Cimanggis – Depok 16953, INDONESIA
Telp. (021) 874-0202, Fax (021) 877-40746
www.mutucertification.com

Certificate Number
LVLK-003/MUTU/LK-007
Date of Initial Registration
29 December 2010
Date of Last Issued
29 December 2016
Date of Expiry
28 December 2019

KAN Komite Akreditasi Nasional
LVLK-003-IDN

Issued Number 3

REGISTRATION CERTIFICATE

mutu certification international

Appendix : Timber Legality Certification - Certificate Number : LVLK-003/MUTU/LK-007
SCOPE OF CERTIFICATION

Company Name and Address : **PT KUTAI TIMBER INDONESIA** **Unit Probolinggo** : Jl. Tanjung Tembaga Baru, Kelurahan Mayangan, Kec. Mayangan, Kota Probolinggo, Jawa Timur, INDONESIA **Unit Lumajang** : Desa Jarit, Kecamatan Candipuro, Kabupaten Lumajang, Provinsi Jawa Timur, INDONESIA **Phone / Fax** : **(0335) 422412 / (0335) 421669** **Contact Person** : **Mr. Capt. H. M. Saint Latief**	*Date of Initial Registration :* ***29 December 2010*** *Date of Last Issued :* ***29 December 2016*** *Date of Expiry :* ***28 December 2019*** ***Issued Number : 3*** KAN Komite Akreditasi Nasional **LVLK-003-IDN**

Industry License Holder	Kind of Products	Capacity (M^3/Year)
I. Primary Industry (IUIPHHK) : a. Keputusan Menteri Kehutanan No. SK.63/MENHUT-VI/BPPHH/2006 (Unit Probolinggo), Tanggal 16 Januari 2006	Plywood	148.500
	Penggergajian kayu	36.000
b. Keputusan Menteri Kehutanan RI Nomor: SK.483/Menhut-II/2011 tanggal 19 Agustus 2011 (Unit Lumajang)	Veneer	42.000
	Penggergajian kayu	18.000
II. Downstream Timber Industry (Advanced IUI) : a. Keputusan Kepala Badan Pelayanan Perijinan Kota Probolinggo Nomor: 503/001/425.202/IP/2011 tanggal 19 Desember 2011	Fancy Panel	4.800
	Lumber Core/ Joint Board	67.500
	Wood Working/ Moulding	9.600
	Scarf Joint/ Jumbo Panel	10.800
	Door Component	36.000
	Blockboard	42.000
	Produk Lainnya Turunan Kayu Lapis	22.800
b. Keputusan Kepala BKPM Nomor: 294/T/INDUSTRI/2008 tanggal 02 April 2008	Particle Board	128.000

Approved by LVLK of PT Mutuagung Lestari

Arifin Lambaga
President Director

P.T. KUTAI TIMBER INDONESIA
PLYWOOD, PARTICLE BOARD AND WOOD INDUSTRY
FACTORY : Jl. Tanjung Tembaga Baru / Pelabuhan Probolinggo 67201- Jawa Timur
Telp. : (0335) 422412 (Hunting) ; Fax. : (0335) 421669
E-mail :pr@kti.co.id.

LETTER OF STATEMENT

No. 459/VI/KTIP/D-3/2017

We, the undersigned below hereby certify that

1. Flamebreaks are eco-friendly, and the core was made from wholly wood with no chemical contents except glue.
2. We have official statement from our supplier that glue used for flamebreaks are Zero Ozone Depletion Potential.

This is the statement I have made truly.

Probolinggo, June 2nd 2017
P.T. Kutai Timber Indonesia

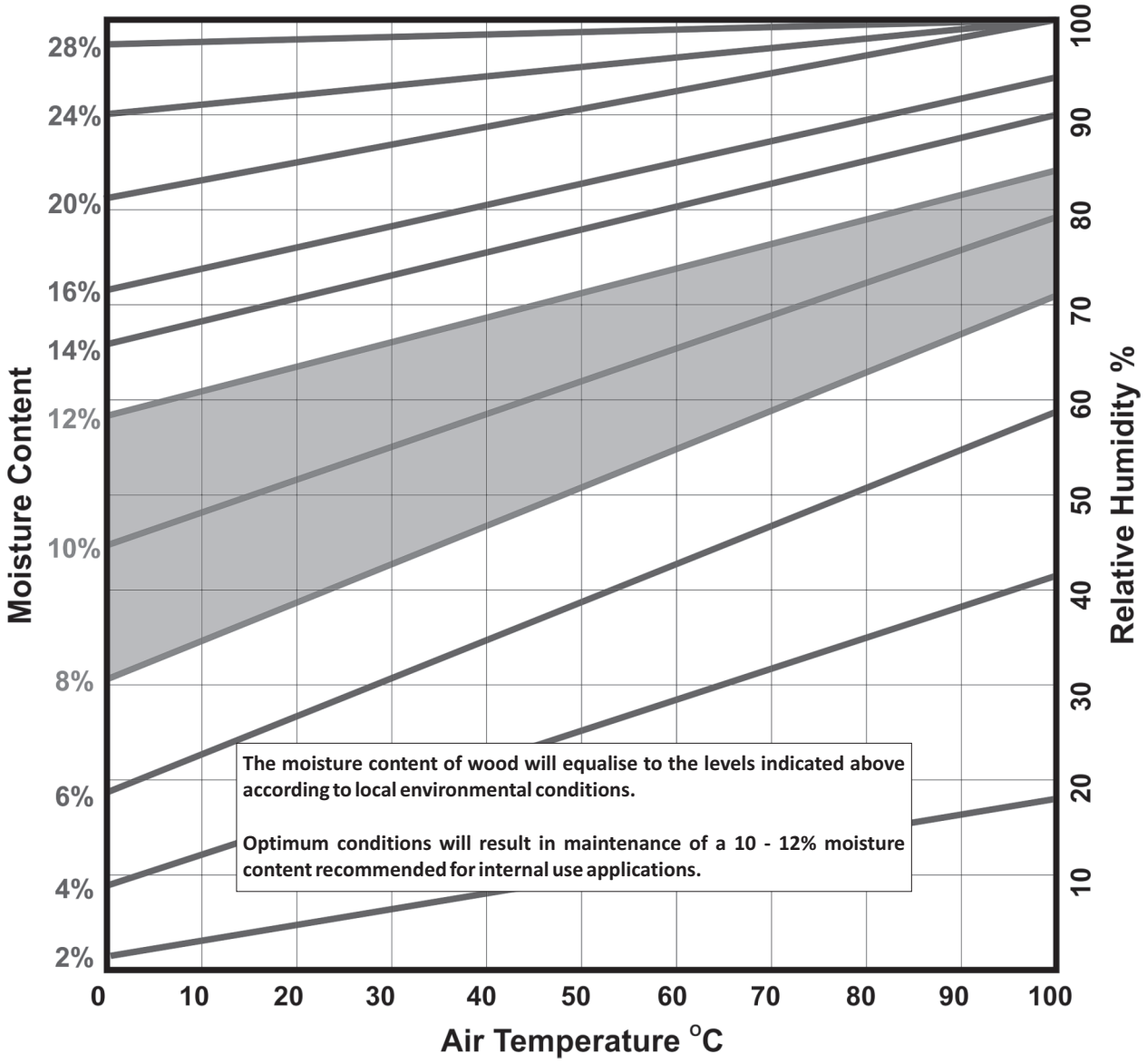
P.T. KUTAI TIMBER INDONESIA PROBOLINGGO

Satoshi Kawanami
President Director

HEAD OFFICE : Jakarta 12190, Telephone : (021) 2521260
BRANCH : Surabaya 60272, East Java, Telephone : (031) 5343835
Samarinda 75117, East Kalimantan, Telephone : (0541) 741966
PLANTATION & LABORATORY : Sepuh Gembol, Bermi - Kerucil Kab. Probolinggo, Kelatakan-Tanggul, Jember - Jawa Timur

HOMEBREW

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.

General Recommendations Installation Procedure (Door Assemblies):

1/ Check the opening into which the door assembly 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 door assembly design. In particular, the standard required to receive door assemblies 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 installation 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 door assembly 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 : 2016.

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 door assembly.

NOTE 3: Building Control Officers may wish to inspect the door assembly installation 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 - 40mm steel pins, fixed at an angle, punched with pin holes filled as described for door stops.

10/ Fix projecting hardware and test the door assembly for the correct operation.

NOTE: It is recommended that the environmental conditions are measured at the time of installation of the door assembly 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 installed door assembly and offer for handover to the Main Contractor (*Client*).

12/ Apply protection to the door set 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. 11/2in. (38mm) for load bearing hardware.

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:

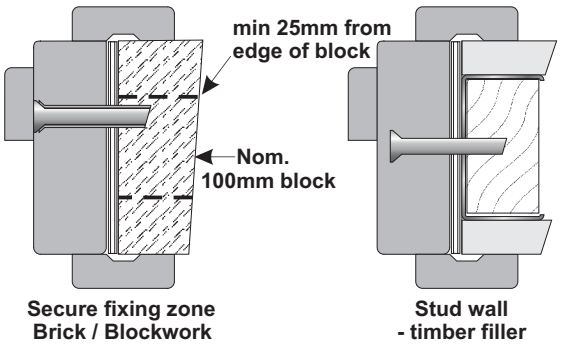
- *Operating gaps (which may contain edge seals) can be maintained.*
- *Doors are delivered when site conditions are suitable.*

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.

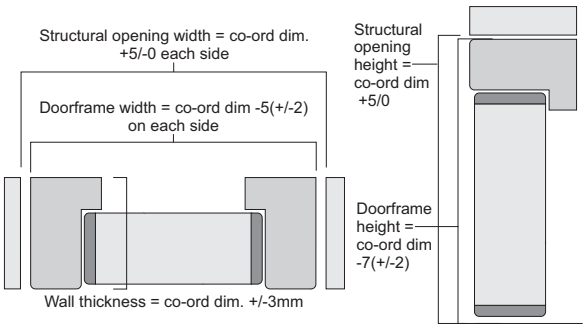
2.3.1 Prepared openings

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.

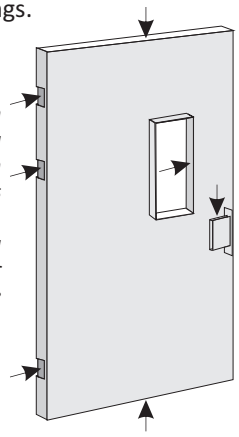
- *Do not bring joinery to site until moisture readings are between 40~60% RH and until any forced-drying procedure has been completed.*

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.*

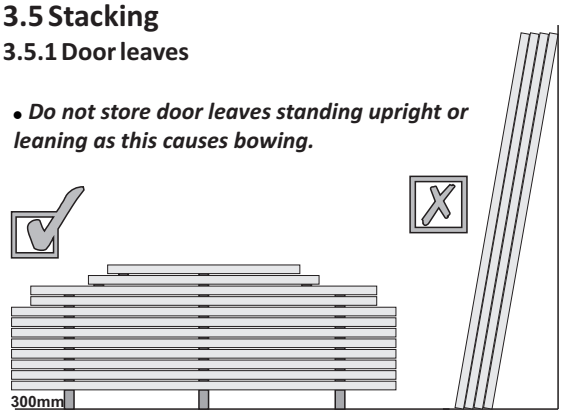
3.4 Handling

- *Avoid bruising and damage caused by heavy contact with the ground. Wear clean gloves 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 a minimum of 3No. supports located 300mm from each end and centre in door height with additional intermediate supports if the door is over 2100mm in height.*
- *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:

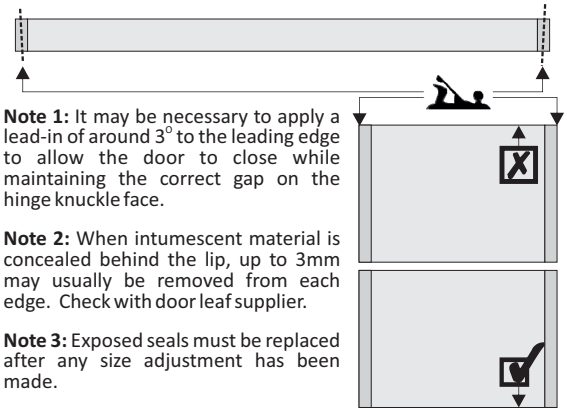
- ***Shrinkage due to drying out.***
- ***Growth due to increased moisture.***
- ***Deflection of structural members.***

- *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.

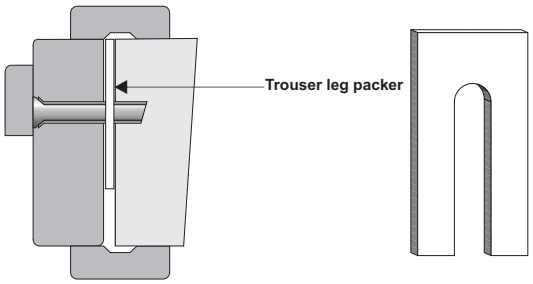
- *Use 3 hinges per door leaf for all fire doors above 1500mm in height unless otherwise specified.*
- *When door leaves exceed 2250mm in height or 160kgs (weight), consult the hardware supplier. One or more additional hinges may be required.*

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 off-cuts 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.*

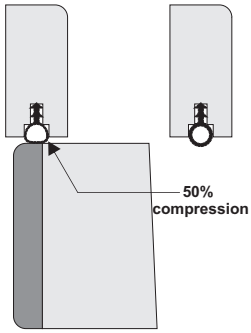


Note: The lateral force at the bottom hinge position can compress packings and metal studs causing the leading edge to drop. Before installing, ensure that studs are secure and that fillings are dry.

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.

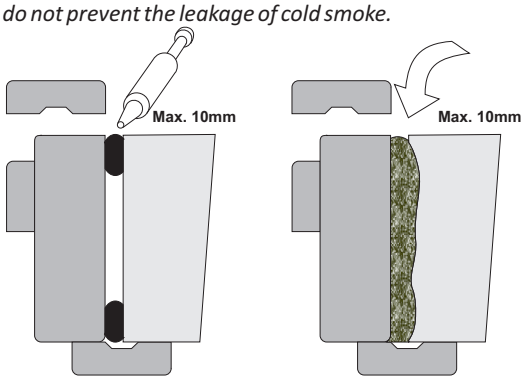
- Only as a last resort should door leaf edges be trimmed, this may necessitate replacement of seals and repositioning of hardware affecting the quality and integrity of the door.

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 by reference to Appendix 16B.9 & 11.

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.)

Pacific Rim Wood Ltd.,
Ground Floor Suite, Block B,
The Old Kelways
Somerton Road
Langport,
Somerset TA10 9SJ

Tel: +44 (0) 1458 252 305

E-mail: enquiries@prwuk.com

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The causes and suggested remedies can be these:

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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.

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General 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 Door Assemblies:
Clean as necessary with warm soapy water.
Re paint at approx. 5 year intervals following paint manufacturers instructions.

Hardware:
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: Door assemblies 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 : 2016 for further advice concerning maintenance of Fire doors.

16C.1 Appendix 16C. 3rd. Party Certification Providers

Whereas this Manual is based upon 3rd. party certification provided by Exova 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.

Fire Door Manufacture

Exova BM TRADA:

Exova BM TRADA is a UK and internationally recognised provider of high quality customer focused independent third party certification. Part of Exova (UK) Ltd. 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 voluntary-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 and maintainers 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, companies are required to prove to Exova 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 customers 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 Exova WarringtonFire Global Assessment Report. Customers 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.

Exova BM TRADA
Chiltern House
Stocking Lane
Hughenden Valley
High Wycombe
Buckinghamshire HP14 4ND
United Kingdom

Tel: +44 (0) 1494 569 800

Email: productcertification@exova.com
Web: www.exovabmtrada.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 9001:2015
- 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 https://www.warringtoncertification.com/certifire/technical-schedules.html 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 Exova (UK) Limited trading as Warrington Certification operates as both a Notified Body and as a European Technical Approvals issuing body.

Warrington Certification, Holmesfield Road, Warrington, Cheshire WA1 2DS. Great Britain

Tel: +44(0) 1925 646 777 **Email: EWCL@exova.com** **Web: www.warringtoncertification.com**

IFC Certification Ltd (IFCC), a member of the IFC Group, provides UKAS accredited customer focussed independent third party certification of fire protection products.

Product Certification

The IFC Certification quality mark is designed for manufacturers to demonstrate the superiority of their products over those which may not be 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.

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

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

IFCC product certification schemes are complemented by 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.

Installer Certification

IFC Certification Ltd (IFCC) provides independent third party certification to installers of fire protection products. To be effective in preventing or controlling the spread of fire, 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

ACOUSTIC SELECTOR

NORSOUND

Specialists in the design and manufacture of high performance acoustic door seals.

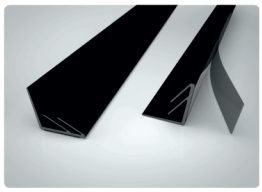
http://www.acousticselector.com/

FLAMEBREAK

NORSOUND

The Norsound range of sealing solutions are made in Germany by our dedicated manufacturing plant, where unique production processes have been refined over decades.

This ensures our products are produced with long lasting materials and the smoothest mechanics, providing effective sealing properties up to 97% of a door's fully caulked performance.

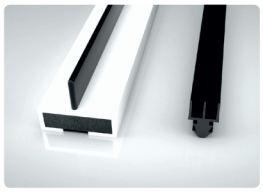


NOR710 Acoustic Perimeter Seal

- 'Dual air pocket' technology
- Smoke seal in accordance with BS476: Pt 31:1983
- Anti-microbial - ideal for hospitals & care homes
- Unaffected by door furniture

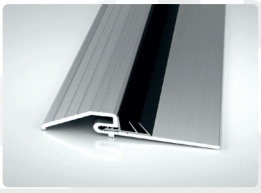
NOR810 ® Acoustic Drop Seal

- Parallel drop technology
- Fire door compatible BS476: Pt 22:1987
- Silicone seal covers 20mm gap
- Removable actuator



NOR720 Acoustic Perimeter Seal & Intumescent Fin

- Substitute NOR720 for any intumescent fin on FR doors
- Identical acoustic performance
- Co-extruded for extra durability



NOR650 Acoustic Threshold Plate **

- Incorporates acoustic gasket
- Additional acoustic performance
- Document 'M' compliant

ACOUSTIC SELECTOR.COM

** With reference to test data, the use of other thresholds in the NOR600 range are optional.

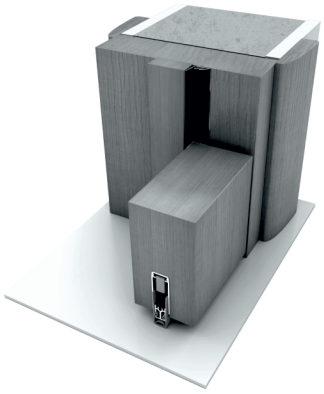
SINGLE DOOR

NORSOUND

44MM / 54MM FLUSH & GLAZED

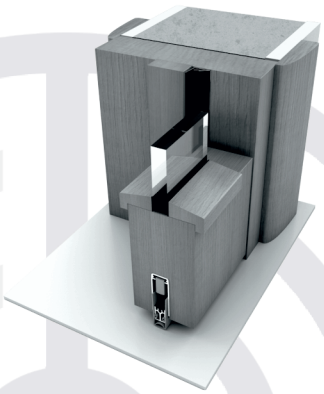
SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	**29**
45mm	630	NOR710	NOR810	**29**
54mm	660 FF660	NOR710	NOR810	**32**



SINGLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	NOR710	NOR810	>6mm	**32**
45mm	630	NOR710	NOR810	>6mm	**32**
54mm	660 FF660	NOR710	NOR810	>6mm	**33**
54mm	660 FF660	NOR710	NOR810	>7mm	**34**



ACOUSTIC SELECTOR.COM

http://www.acousticselector.com/

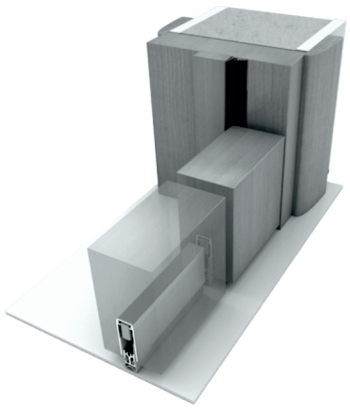
DOUBLE DOOR

NORSOUND

44MM / 54MM FLUSH & GLAZED

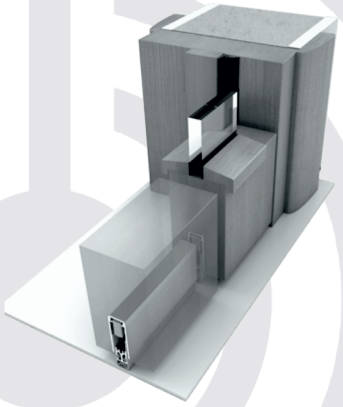
DOUBLE DOOR FLUSH

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	NOR720	**30**
44mm	430 FF630	NOR710	NOR810	2 x NOR720	**31**
45mm	630	NOR710	NOR810	NOR720	**30**
45mm	630	NOR710	NOR810	2 x NOR720	**31**
54mm	660 FF660	NOR710	NOR810	NOR720	**33**
54mm	660 FF660	NOR710	NOR810	2 x NOR720	**34**
54mm	660 FF660	NOR710	NOR810	2 x NOR720	**35**



DOUBLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430	NOR710	NOR810	>6mm	2 x NOR720	**30**
44mm	430 FF630	NOR710	NOR810	>7mm	2 x NOR720	**33**
45mm	630	NOR710	NOR810	>6mm	2 x NOR720	**32**
45mm	630	NOR710	NOR810	>7mm	2 x NOR720	**33**
44mm	FF630	NOR710	NOR810	>6mm	2 x NOR720	**32**
54mm	660 FF660	NOR710	NOR810	>6mm	NOR720	**33**
54mm	660 FF660	NOR710	NOR810	>6mm	2 x NOR720	**35**



ACOUSTIC SELECTOR.COM

For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

http://www.acousticselector.com/

SPECIALIST APPLICATIONS

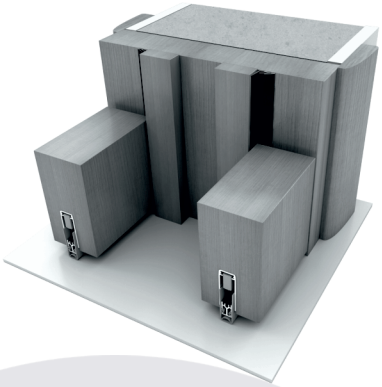
NORSOUND

Norsound have a wealth of acoustic evidence for a wide range of specialist doorset applications, including back-to-back doors for lobbies and hotel interconnecting rooms, double action doors for areas of multi-directional high traffic as well as specialist overpanel details.

INTERCONNECTING DOORSETS

INTERCONNECTING SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	**40**
45mm	630	NOR710	NOR810	**40**
54mm	660 FF660	NOR710	NOR810	**40**



ACOUSTIC SELECTOR.COM

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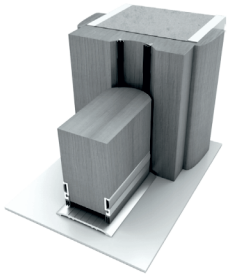
DOUBLE ACTION DOORS

NORSOUND

44MM / 54MM SINGLE & DOUBLE FLUSH & GLAZED

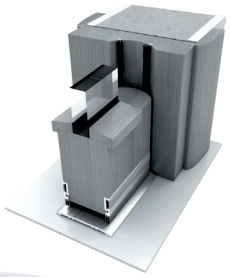
DOUBLE ACTION SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	**28**
45mm	630	2 x NOR720	2 x NOR855	**28**
54mm	660 FF660	2 x NOR720	2 x NOR855	**30**



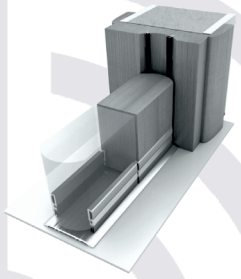
DOUBLE ACTION SINGLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	>7mm	**31**
45mm	630	2 x NOR720	2 x NOR855	>10mm	**33**
54mm	660 FF660	2 x NOR720	2 x NOR855	>12mm	**35**



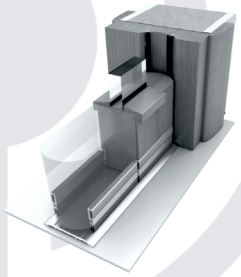
DOUBLE ACTION DOUBLE DOOR FLUSH

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	2 x NOR720	**29**
45mm	630	2 x NOR720	2 x NOR855	2 x NOR720	**29**
54mm	660 FF660	2 x NOR720	2 x NOR855	2 x NOR720	**31**



DOUBLE ACTION DOUBLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	>7mm	2 x NOR720	**32**
45mm	630	2 x NOR720	2 x NOR855	>10mm	2 x NOR720	**32**
54mm	660 FF660	2 x NOR720	2 x NOR855	>12mm	2 x NOR720	**34**



ACOUSTIC SELECTOR.COM

The use of a threshold plate from the NOR600 range is required
For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

http://www.acousticselector.com/

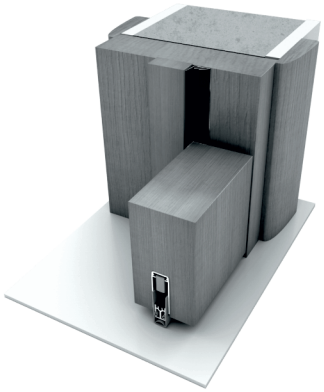
TRANSOM OVERPANEL

NORSOUND

44MM / 54MM SINGLE FLUSH & GLAZED

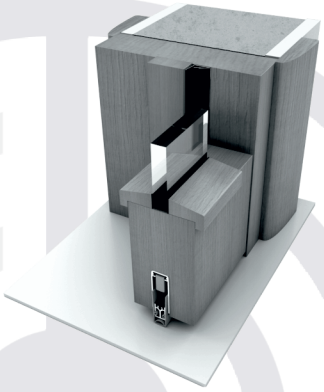
TRANSOM OVERPANEL SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	**29**
45mm	630	NOR710	NOR810	**29**
54mm	660 FF660	NOR710	NOR810	**32**



TRANSOM OVERPANEL SINGLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	NOR710	NOR810	>6mm	**32**
45mm	630	NOR710	NOR810	>6mm	**32**
54mm	660 FF660	NOR710	NOR810	>6mm	**33**
54mm	660 FF660	NOR710	NOR810	>7mm	**34**



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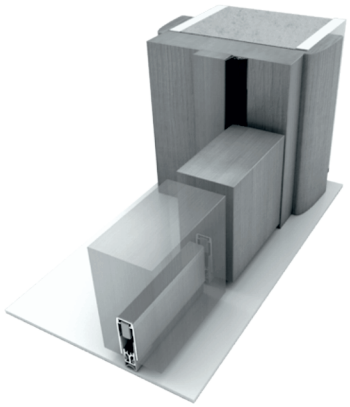
TRANSOM OVERPANEL

NORSOUND

44MM / 54MM DOUBLE FLUSH & GLAZED

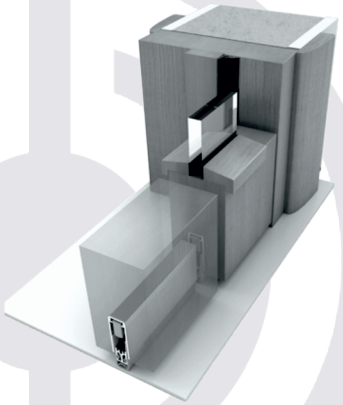
TRANSOM OVERPANEL DOUBLE DOOR FLUSH

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	NOR720	**30**
44mm	430 FF630	NOR710	NOR810	2 x NOR720	**31**
45mm	630	NOR710	NOR810	NOR720	**30**
45mm	630	NOR710	NOR810	2 x NOR720	**31**
54mm	660 FF660	NOR710	NOR810	NOR720	**33**
54mm	660 FF660	NOR710	NOR810	2 x NOR720	**34**
54mm	660 FF660	NOR710	NOR810	2 x NOR720	**35**



TRANSOM OVERPANEL DOUBLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430	NOR710	NOR810	>6mm	2 x NOR720	**30**
44mm	430 FF630	NOR710	NOR810	>7mm	2 x NOR720	**33**
45mm	630	NOR710	NOR810	>6mm	2 x NOR720	**32**
45mm	630	NOR710	NOR810	>7mm	2 x NOR720	**33**
44mm	FF630	NOR710	NOR810	>6mm	2 x NOR720	**32**
54mm	660 FF660	NOR710	NOR810	>6mm	NOR720	**33**
54mm	660 FF660	NOR710	NOR810	>6mm	2 x NOR720	**35**



ACOUSTIC SELECTOR.COM

For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

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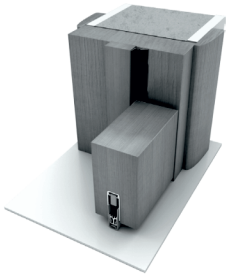
FLUSH OVERPANEL

NORSOUND

44MM / 54MM SINGLE & DOUBLE FLUSH & GLAZED

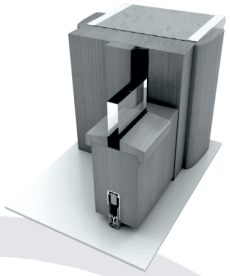
FLUSH OVERPANEL SINGLE DOOR FLUSH USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	**29**
45mm	630	NOR710	NOR810	**29**
54mm	660 FF660	NOR710	NOR810	**30**
54mm	660 FF660	NOR710 NOR720	NOR810 NOR650	**32**



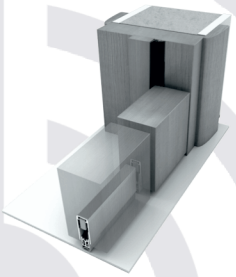
FLUSH OVERPANEL SINGLE DOOR GLAZED USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	NOR710	NOR810	>7mm	**32**
45mm	630	NOR710	NOR810	>10mm	**33**
54mm	660 FF660	NOR710	NOR810	>12mm	**34**



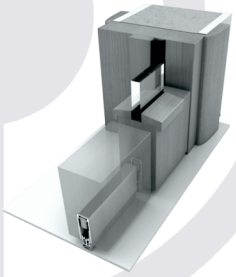
FLUSH OVERPANEL DOUBLE DOOR FLUSH USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	2 x NOR720	**29**
45mm	630	NOR710	NOR810	2 x NOR720	**29**
54mm	660 FF660	NOR710	NOR810	2 x NOR720	**31**



FLUSH OVERPANEL DOUBLE DOOR GLAZED USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	>7mm	2 x NOR720	**30**
45mm	630	NOR710	NOR810	>10mm	2 x NOR720	**30**
54mm	660 FF660	NOR710 NOR720	NOR810	>12mm	2 x NOR720	**35**



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For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

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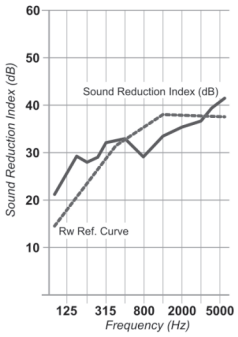
Approved Document - 'E' (Passage of Sound)
Approved Document - 'B' (Fire Safety)
Approved Document - 'M' (Access To and Use of Buildings)
Building Bulletin - 93 (Acoustic design in schools)*

** See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"*



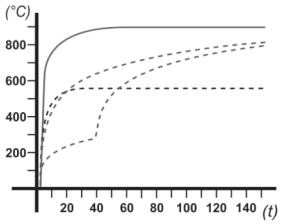
STS 1009 Acoustic/smoke perimeter seal :20

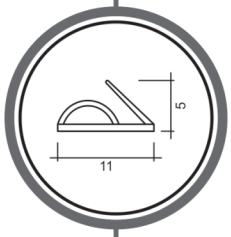
Characteristics / features

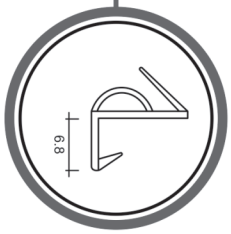
Product code	Size / Length	Colour(s)	Material(s)
STS 1009 * "COLOUR/SIZE" See below	2100mm 2400mm 2700mm 3000mm	B BROWN BK BLACK CL CLEAR G GREY W WHITE	NEOPRENE/BUTYL

Characteristics / features

Protects against / Resisits	Fitting / installation	Performance
SMOKE SOUND DRAUGHT DUST INFESTATION	STS 1009 - self-adhesive STS 1009K* - kerf/push-fit	ACOUSTIC - See STS data sheets :01 - :16 SMOKE / FIRE - STS test data available on request







STS 1009

Perimeter acoustic/smoke seal

Available in both kerf-fit and self-adhesive versions, the ST1009 is the most versatile, cost-effective perimeter seal on the market. It offers simple solutions and is specifically designed to have adverse effects on the operational integrity of the door.

Used in "compression", the ST1009 fits to the active face of the door-stop and thus has a minimal effect on the force required to close the door. The low co-efficient of the material ensures even less resistance to compression and excellent product recovery when the door is opened.

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Approved Document - 'M' (Access To and Use of Buildings)
Building Bulletin - 93 (Acoustic design in schools)*

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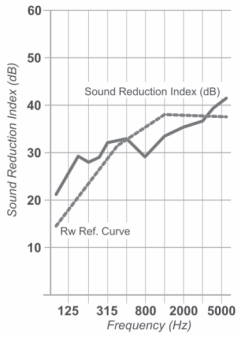


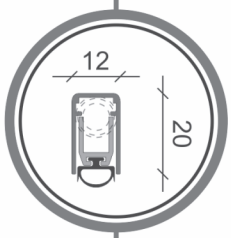
STS 422 Door-bottom seal :16

Characteristics / features

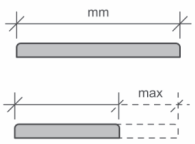
Product code	Size / Length	Colour(s)	Performance
STS 422 - "SIZE" See table below	VARIOUS See table below	N / A	ACOUSTIC - See STS data sheets :01 - :16

Characteristics / features

Protects against / Resisits	Fitting / installation	Material(s)
FIRE SMOKE SOUND DRAUGHT DUST INFESTATION	See STS data sheet :17	Casing: ALUMINIUM (T60/60) Seal: NEOPRENE/BUTYL Mechanism: STEEL/NYLON



Sizes

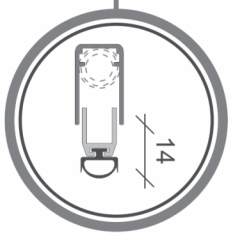


Product size (pre-cut) mm							
330	530	730	830	930	1030	1130	1330
70	200	200	200	200	200	200	200

Product cuts back by (maximum) mm

Please note

Pre-cut sizes are available at **925mm**, **825mm** & **725mm** to suit standard width doorsets.



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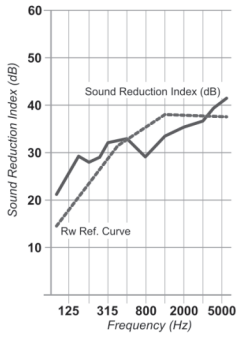
Building Bulletin - 93 (Acoustic design in schools)*

** See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"*



STS 422GT Door-bottom seal :18

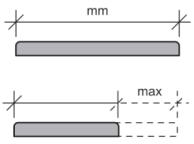
Characteristics / features

Product code	Size / Length	Colour(s)	Performance
STS 422GT - "SIZE" See table below	VARIOUS See table below	N / A	ACOUSTIC - See STS data sheets :01 - :16

Characteristics / features

Protects against / Resisits	Fitting / installation	Material(s)
FIRE	See STS data sheet :19	Casing: ALUMINIUM (T60/60)
SMOKE		Seal: NEOPRENE/BUTYL
SOUND		Mechanism: STEEL/NYLON
DRAUGHT		
DUST		
INFESTATION		

Sizes



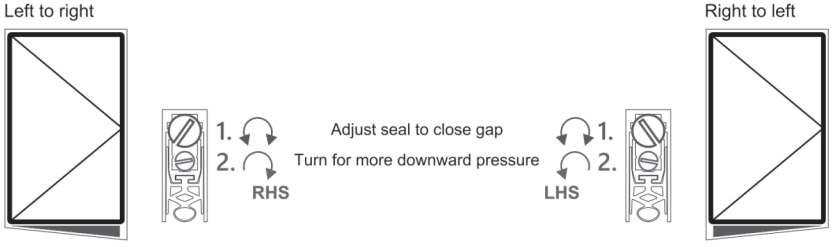
Product size (pre-cut) mm						
430	530	730	930	1130	1330
150	160	200	200	200	200

Product cuts back by (maximum) mm

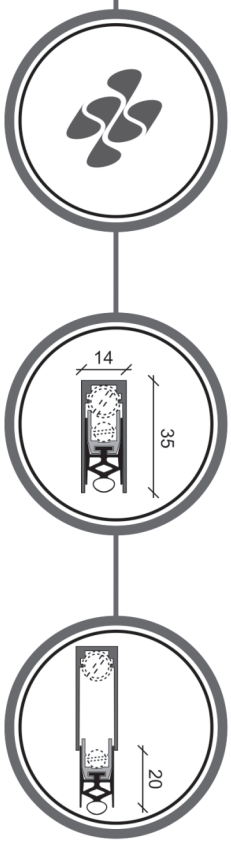
Adjustment

Uneven Threshold

Left to right



Right to left



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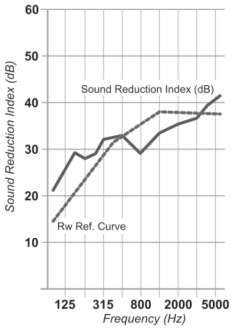

:01 FLAMEBREAK

44mm

44mm - Single / Flush

Head / Jambs	Door-bottom	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	**31**	see STS ref: 37

44mm - Single / Glazed

Head / Jambs	Door-bottom	Glass	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	7mm	**33**	see STS ref: 10

44mm - Pair / Flush

Head / Jambs	Door-bottom	Meeting stile	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	**32**	see STS ref: 66

44mm - Pair / Glazed

Head / Jambs	Door-bottom	Meeting stile	Glass	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	6mm	**33**	see STS ref: 68
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	7mm	**33**	see STS ref: 69
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	10mm	**33**	see STS ref: 71

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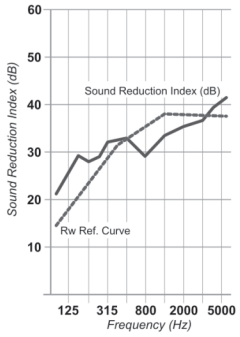
acoustic

acoustic test data

All STS acoustic data is sourced, supplied and verified by independent, UKAS-accredited test facilities in accordance with all relevant British and European standards.

Approved Document 'E' (Passage of Sound)
Approved Document 'B' (Fire Safety)
Approved Document 'M' (Access To and Use of Buildings)
Building Bulletin 93 (Acoustic design in schools)*

** See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"*



:02

FLAMEBREAK

54mm

54mm - Single / Flush

Head / Jambs	Door-bottom	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	**31**	see STS ref: 19

54mm - Single / Glazed

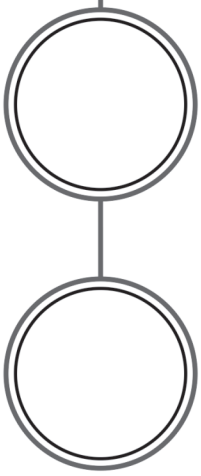
Head / Jambs	Door-bottom	Glass	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	10mm	**34**	see STS ref: 18

54mm - Pair / Flush

Head / Jambs	Door-bottom	Meeting stile	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	STS 154FL single-blade seal	**32**	see STS ref: 57

54mm - Pair / Glazed

Head / Jambs	Door-bottom	Meeting stile	Glass	Sound Reduction (dB*Rw*)	
ST1009 perimeter seal	STS 422 drop seal	STS 154FL single-blade seal	10mm	**33**	see STS ref: 54
ST1009 perimeter seal	STS 422 drop seal	STS 154FL single-blade seal	15mm	**33**	see STS ref: 55



Pilkington Glass types - Performance Guidance:

This table provides only a general description of the products. Further, more detailed, information may be obtained from local suppliers of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any errors in or omissions from this publication and for all consequences of relying on it.

Physical Data

Glass Type	Product Code	Fire resistance Integrity/ Insulation	Nominal Glass Thickness approx. mm	Light Transmission	Weight approx. kg/m^3	Glass Thickness Tolerance approx. mm	Sound Reduction approx. dB (a)	BS6206 / BS EN 12600 Impact (b)
Pilkington **Pyrostop**™ (c)	30 - 103	30 30	14	0.88	35.0	±1.0	38	B / 2
Pilkington **Pyrostop**™ (d)	30 - 10	30 30	15	0.85	35.0	±1.0	38	B / 2
Pilkington **Pyrostop**™	30 - 20	30 30	18	0.84	42.0	±1.0	38	A / 1
Pilkington **Pyrostop**™	60 - 101	60 60	23	0.88	55.0	±2.0	40	A / 1
Pilkington **Pyrostop**™	60 - 201	60 60	27	0.86	61.0	±2.0	41	A / 1
Pilkington **Pyrodur**™ Plus	30 - 104	30 15	7	0.88	17.0	±1.0	35	B / 2
Pilkington **Pyrodur**™	30 - 105	30 15	7	0.90	17.5	±1.0	34	C / 3
Pilkington **Pyrodur**™	30 - 201	30 15	10	0.88	24.0	±1.0	36	B / 2
Pilkington **Pyrodur**™ (c)(d)	20 - 203	30 15	11	0.88	27.5	±1.0	37	A / 1
Pilkington **Pyrodur**™ (e)	30 - 184	30 15	24	0.79	33.0	±2.0	(f)	(f)
Pilkington **Pyrodur**™ (e)	30 - 185	30 15	24	0.79	33.0	±2.0	(f)	(f)
Pilkington **Pyrodur**™ (e)	30 - 251	30 15	24	0.78	40.0	±2.0	(f)	(f)
Pilkington **Pyrodur**™	60 - 10	60 15	10	0.88	24.0	±1.0	35	C / 3
Pilkington **Pyrodur**™	60 - 20	60 15	13	0.86	31.0	±1.0	38	B / 2
Pilkington **Pyroshield 2**™ Safety Clear		30 0	6	0.77	16.6	-0, + 1.4	32	C / 3
Pilkington **Pyroshield 2**™ Texture		30 0	7	0.79	16.7	±0.7	31	N/A

a. R_w Index (weighted sound reduction) corrected for human ear based on internal measurements.
b. BS 6206 / BS EN 12600 classifies individual panes of glass only. (*BS 6206 is withdrawn*)
c. Tested to BS EN 356 Glass in building. Security glazing. Testing and classification of resistance against manual attack
d. Satisfies P(1)A performance - for Approved Document 'Q' applications.
e. Sealed double glazed units.
f. Variable according to assembly - consult Pilkington UK Ltd.

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 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 that may affect fire performance. The glass must be protected from site contamination such as welding, cementitious, plaster products or adhesives.

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PILKINGTON

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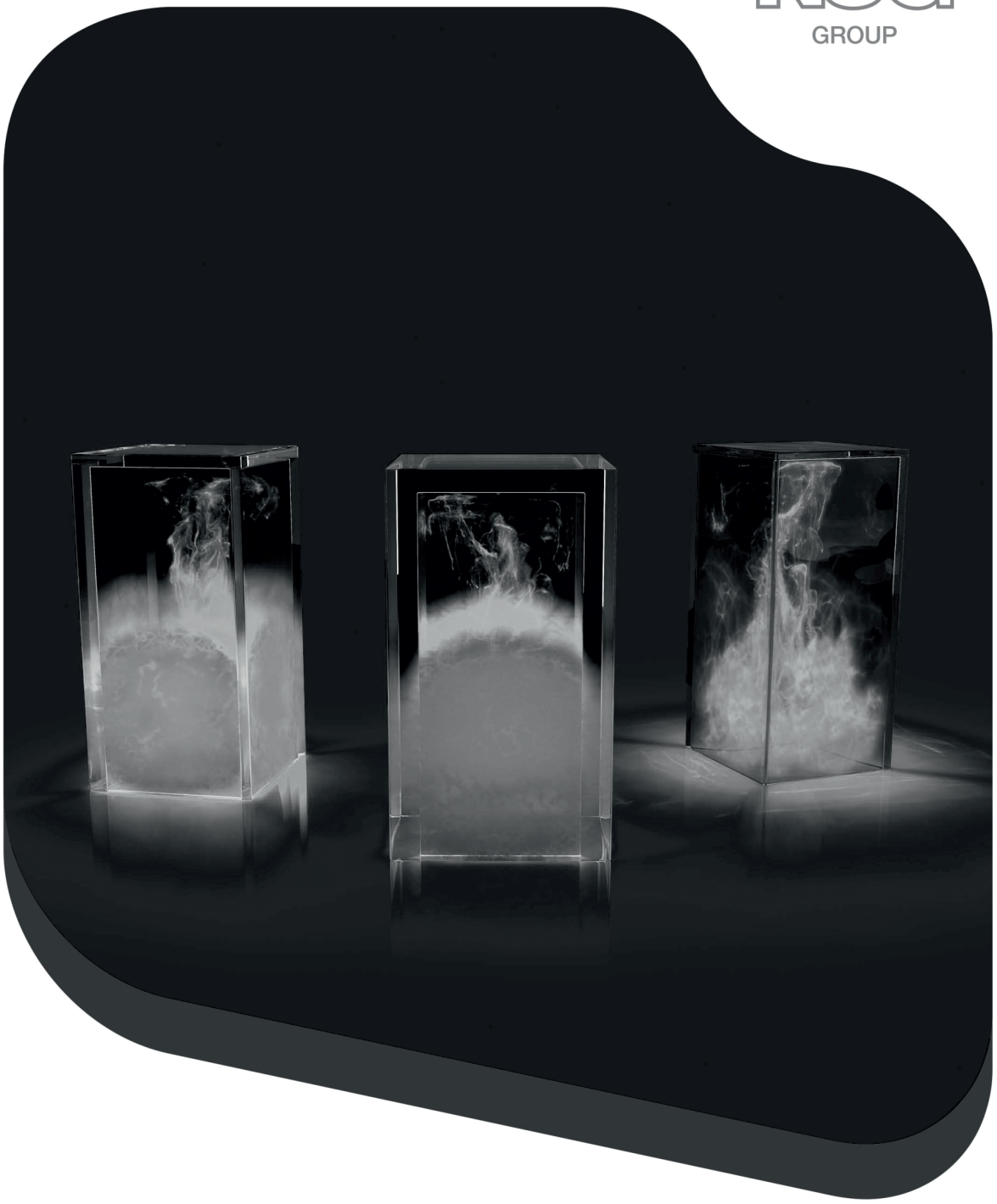

Fire-Resistant Glass Range

Pilkington **Pyrostop®**
Pilkington **Pyrodur®**
Pilkington **Pyrodur®** Plus
Pilkington **Pyroclear®**
Pilkington **Pyroshield™** 2

- Pilkington **Pyrostop**®
- Pilkington **Pyrodur**®
- Pilkington **Pyrodur**® Plus
- Pilkington **Pyroclear**®
- Pilkington **Pyroshield**™ 2

The UK's most versatile and reliable suite of fire-resistant glass solutions. Tried, tested, trusted.

Application

- Doors and door sets, with side and over glazed panels, internal and external
- Glazed partitions and screen assemblies
- Units with integral blinds available
- Stairwells, lobbies and escape routes
- Protected fire fighter shafts
- Overhead glazing and façades
- Load-bearing glass floors (for safety, must be insulation rated)
- A wide range of practical framing options, glazing configurations and glass sizes. Available in a comprehensive size range and can be used in various combinations with other glass types in Insulating Glass Units (IGUs)

Key Guidance

- Test evidence must be available, appropriate to the application
- Customers, installers and users should make sure that the test evidence is available and applicable
- The glazed system must be installed according to the evidence
- Edge protection tape must not be removed
- Please observe guidelines on product handling and storage

Taking Responsibility

The Regulatory Reform (Fire Safety) Order 2005 emphasizes responsibility in law for the provision of fire safety measures in buildings, starting with those in control of the premises. That includes suppliers and installers, who have a duty of care to ensure that the product is fit for purpose and appropriate.

Benefits

- Comprehensive range of approvals for a wide range of applications
- Reliable and robust proprietary technologies backed by the renowned Pilkington brand
- Consistent and reproducible fire resistance performance, tested internally to our quality requirements
- Personal guidance on the key elements governing applications: regulations, legislation, fire safety principles, custom and design practice
- Fire test summaries provide ready reference support documentation
- All products in the range CE Marked and have their own DoP (Declaration of Performance)
- Certifire certification available, reference: CF5140, CF328, CF718
- Detailed guidance on glazing, handling, quality and product performance data, readily available as downloads

Specifire our on-line specification tool – to help find the right glazing solution. www.pilkington.co.uk/specifire

To find out more,
visit www.pilkington.co.uk/fire
email pilkington@respond.uk.com
or call our customer contact centre on 01744 692000.

Insulation

Pilkington **Pyrostop®**

- Highly successful intumescent technology
- Forms opaque and robust insulating barrier against heat, flames and fumes
- A sodium silicate interlayer (therefore not liable to flame or smoke on non-fire side)
- Classes 30, 60, 90, 120 and 180 minutes insulation & integrity (EI)(2)
- Impact safety up to class 1(B)1(1)
- Extensively specified worldwide in timber and metal framing systems
- Good visual and optical quality

Integrity

Pilkington **Pyrodur®**

- Based on intumescent technology
- Class 30 and 60 mins integrity (E)(2)
- Protection from radiant heat (EW30) and added insurance of insulation for 15 minutes (EI)(2)
- Impact safety class up to 1(B)1(1)

Pilkington **Pyrodur®** Plus

- A unique and special intumescent technology
- Only 7 mm thick, integrity 30 minutes (E)(2)
- Protection from radiant heat (EW30) and added insurance of insulation for 15 minutes (EI)(2)
- Ideal for internal applications in partitions, doors and door set glazed screens
- 2(B)2 impact safety class(1)
- Insulating Glazing Units also available

Pilkington **Pyroshield™** 2

- Traditional Georgian wired glass
- Safety, 30 and 60 minutes integrity (E)(2), impact safety class 3(B)3(1)
- Texture version – integrity 30 minutes (E)(2)
- Extensively used by the trade over decades
- NEW test evidence for 60 minutes integrity (E)(2)

Pilkington **Pyroclear®**

- A unique, NEW, special modified toughened glass, 30 and 60 minutes integrity (E)(2)
- Designed for consistency: proprietary NSG processing technology, a special toughening specification and specific control criteria
- Product design and use backed by a new validated computer model
- Achieved 50 successive tests in timber frames before launch
- Less sensitive to edge cover relative to standard modified toughened glasses
- Impact safety 1(C)1, i.e. at highest drop height in the impact test(1)
- Large sizes and flexible use in timber, metal and composite doors and screens
- Ideal for safe escape before fire conditions become untenable

Fire resistance

Integrity

A physical barrier against flames, smoke and fumes.

Insulation

A heat and physical barrier against fire, based on measured surface temperature limits under test in standard conditions. For protection against all heat, i.e. by conduction, radiation and convection.

Protection from noise

Pilkington **Pyrostop®** and Pilkington **Pyrodur®** provide good acoustic performance, which can be further enhanced in Insulating Glass Units and by combination with acoustic laminated glass. Acoustic design is now important for many situations, e.g. in schools, hospitals and offices. Options from R_w34 to R_w48 dB available.

Notes:

(1) BS EN 12600, Impact test and classification.
Class C indicates mode of breakage as toughened safety glass.
Class B indicates mode of breakage as toughened laminated glass.
(2) BS EN 13501-2, Classification from fire resistance tests. I = Insulation; E = Integrity; W = radiation (not in UK regulations).

www.pilkington.co.uk/fire

11342 – September 2013

This publication provides only a general description of the products. Further, more detailed, information may be obtained from your local supplier of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any error in or omission from this publication and for all consequences of relying on it.

Please note that imagery throughout is for illustration purposes only.

CE

CE marking confirms that a product complies with its relevant harmonised European Norm.
The Declaration of Performance for each product, including declared values, can be found at
www.pilkington.com/CE

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CI/SfB Ro8 (Aq)

October 2012

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Pilkington **Pyroclear®**

Fire Test Summary

For timber door sets and glazed screens
30 and 60 minutes integrity

Pilkington **Pyroclear®** in Single Leaf, Single Acting Timber Doorset with Fanlight and Glazed Side Screen for 30 minutes integrity

Pilkington **Pyroclear®** is a clear, monolithic, high performance fire-resistant glass providing integrity with impact resistance for screens and doors.

30 minutes integrity – monolithic

Test reference:
RF 11150

Test laboratory:
Chiltern International Fire Ltd

Test date:
13th October 2011

Test sponsor:
Pilkington

Test standard:
BS EN 1634-1:2008 and BS EN 1363-1:1999

General description of the assembly:

- Pilkington **Pyroclear®** 30-001 (6 mm)
- Pane sizes – refer to summary of fire test evidence in timber
- Single leaf, single acting timber doorset with fanlight and glazed side screen

Key to figures 1 and 2

1. Door leaf stiles and rails – European Redwood (density 508 kg/m³) 100 mm x 45 mm thick
2. Framing – head, jambs, sidelight and fanlight - European Redwood (density 481 kg/m³) 80 mm x 44 mm thick Fixed with steel wood screws 100 mm long placed at 600 - 800 mm centres
3. Door stop – planted (pinned) - European Redwood (density 481 kg/m³) 20 mm wide x 12 mm thick
4. Lorient Polyproducts Ltd LP1504 Type 617, 15 x 4 mm (fitted centrally in the frame reveal)
5. Fibrefrax ceramic glazing tape, 20 x 5 mm – compressed to 3 mm (fitted between the glass and bead on both faces)
6. Pilkington **Pyroclear®** 30-001 (6 mm)
7. Glazing packers - Sapele 6 mm thick x 10 mm high x 40 mm long (fitted along the bottom edge of the glass in each aperture)
8. Beading (leaf) – Sapele (density 738 kg/m³), 25 mm high x 21 mm deep including 5 mm x 5 mm bolection return and 20° chamfer
9. Beading (fanlight and side screen) - Sapele (density 738 kg/m³), 20 high x 25 mm deep with a 20° chamfer
10. 50 mm long steel screws, fitted at nominally 70 mm in from corners, at 150 mm (max) centres at 45° to face of glass

Note: Full details of the test (including hardware) are available upon request.

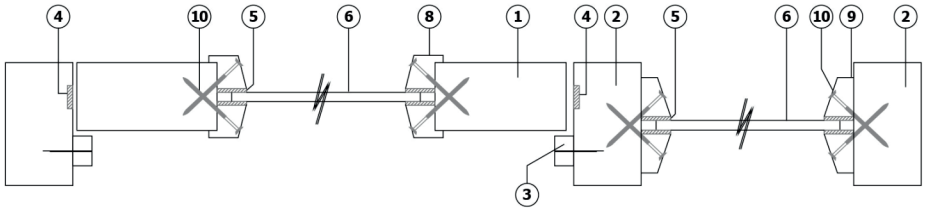

Figure 1: Horizontal section

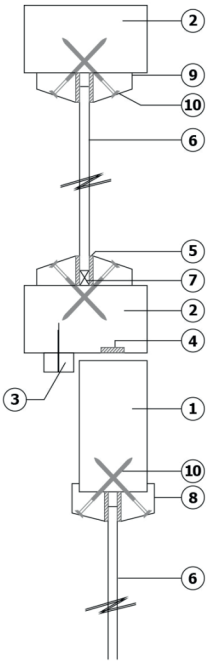

Figure 2: Vertical section

30 minutes integrity – Insulating Glass Unit

Pilkington **Pyroclear®** in a single leaf, single acting timber doorset with a fanlight and glazed side screen for 30 minutes integrity.

Test reference:
RF 12034

Test laboratory:
Chiltern International Fire Ltd

Test date:
22nd March 2012

Test sponsor:
Pilkington

Test standard:
BS EN 1634-1:2008 and BS EN 1363-1:1999

General description of the assembly:

- Pilkington **Pyroclear®** 30-361 (IGU), comprising 4 mm Pilkington **Optitherm™** S3 toughened outer pane, 6 mm airspace and Pilkington **Pyroclear®** 30-001 (6 mm) inner pane (exposed to the fire)
- Pane sizes – refer to summary of fire test evidence in timber
- Single leaf, single acting doorset
- Single leaf, single acting timber doorset with fanlight and glazed side screen

The glazing details are summarised in Tables 1-5.

Table 1: Door leaf – both doorsets

	Species/type	Dimensions (mm)
Stiles and rails	None fitted	–
Core	Falcon Panel Products Strebord particleboard (density 630 – 635 kg/m³)	44 thick
Adhesives/lippings	PU	–
Lippings (vertical edges only)	Sapele (density 640 kg/m³)	6 thick

Table 2: Framing – both doorsets, fanlight and side screen of doorset B

	Species/type	Dimensions (mm)
Head, jambs, sidelight and fanlight	European Redwood (density 510 kg/m³)	80 deep x 44 thick
Door stop – planted (pinned)	European Redwood (density 510 kg/m³)	20 wide x 12 thick
Frame fixings	Steel wood screws at 600 - 800 mm centres	100 long

Table 3: Intumescent materials – both doorsets

	Make/type	Size (mm)	Location
Door frame reveal – head and jambs	Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Fitted centrally in the frame reveal
Around glazing perimeter – leaf, fanlight and side screen	Fibrefrax ceramic glazing tape	20 x 3 (compressed to 20 x 2)	Fitted between the glass and bead on both faces
	Interdens	10 x 2	Fitted lining the glazing aperture

Table 4: Hardware – both doorsets

	Make/type	Size (mm)	Location
Hinges type hinge	3No Royde and Tucker H101 lift off	100 x 35 (blade size)	Fitted 148 mm, 988 mm and 1830 mm from the head of the leaf
Closer	Rutland TS3204 overhead type closer	220 x 59 (footprint size)	Fitted on the exposed face as per the manufacturer's instructions
Latch - disengaged	E*S Easi T tubular mortice latch	57 x 26 (forend size)	Fitted 1000 mm from the threshold of the leaf
		57 x 26 (keep size)	
Furniture	Aluminium lever type handle	100 x 38 (footprint size)	Fitted appropriate to the latch

Table 5: Glazing – both doorsets

	Overall aperture size (mm)	Glass size (mm)
Leaf	470 wide x 1020 high	450 wide x 1000 high
Fanlight – doorset B	930 wide x 470 high	910 wide x 450 high
Side screen – upper aperture	470 wide x 470 high	450 wide x 450 high
Side screen – middle and lower apertures	470 wide x 1020 high	450 wide x 1000 high
Edge clearance between glazing and frame	10 mm on all edges	
Glazing packers	Supalux 16 mm thick x 10 mm high x 40 mm long. Fitted along the bottom edge of the glass in each aperture (2 No per aperture)	
Beading	Sapele (640 kg/m^3 nominal density)	
Beading size – leaf	20 mm high x 17 mm deep including a 5 mm x 5 mm bolection return and a 20° chamfer	
Beading size – fanlight and side screen	20 mm high x 25 mm deep with a 20° chamfer	
Beading fixing	50 mm long steel screws, fitted at nominally 70 mm in from the corners, at 150 mm (max) centres at 45° to the face of the glass	

Summary of fire test evidence in timber

The fire test evidence for Pilkington **Pyroclear®** is summarised in Tables 6 and 7.

Table 6: 30 minutes integrity

Product	Test	Class	Application	Pane sizes (mm) [1]	Test reference
Pilkington **Pyroclear®** 30-001 (6 mm)	BS EN 1634-1 and BS EN 1363-1	E30 and EW30	SLD with top and side lights	467 x 2023 (P) 1450 x 605 (L) 710 x 1850 (D)	RF 11150_A
Pilkington **Pyroclear®** 30-001 (6 mm)	BS EN 1634-1 and BS EN 1363-1	E30	SLD with top and side lights	1000 x 2013 (P) 710 x 1750 (D)	RF 11177
Pilkington **Pyroclear®** 30-361 (IGU) [2]	BS EN 1634-1 and BS EN 1363-1	E30 and EW30	SLD and SLD with top and side lights	450 x 1000 (P) 910 x 450 (L)	RF 12034 450 x 1000 (D)

Notes:

[1] For pane sizes: P = portrait, L = landscape and D = door

[2] Pilkington **Pyroclear®** 30-361 (IGU) comprises 4 mm Pilkington **Optitherm™** S3 (toughened) outer pane, 6 mm airspace and Pilkington **Pyroclear®** 30-001 (6 mm) inner pane

Table 7: 60 minutes integrity

Product	Test	Class	Application	Pane sizes (mm)	Test reference
Pilkington **Pyroclear®** 60-001 (6 mm)	BS 476: Part 22	60 minutes integrity	3 single leaf single acting doorsets	200 x 1000 (Door A) 300 x 1200 (Door B) 300 x 1200 (Door C)	RF 12077

For fire test evidence in steel glazing systems, please refer to Fire Test Summary for Pilkington **Pyroclear®** in steel frames.

Safety

Pilkington **Pyroclear®** is classified as a 1 (C) 1 safety glass according to BS EN 12600 and has been tested in accordance with BS EN 1363-1, BS EN 1364-1 and BS 476 : Part 22: 1987 for fire-resistance.

General

Glazing must be installed fully in accordance with Pilkington tested details and installation requirements, particularly with respect to edge cover and expansion tolerances.

For guidance on installation, please refer to Pilkington **Pyroclear®** Glazing and Handling Guidelines for Fire-resistant Glass.

For technical advice on the Pilkington range of fire protection glass, please refer to **www.pilkington.com/specifire** or contact us by telephone on **01744-69-2000** or email at **pilkington@respond.uk.com**

CE

CE marking confirms that a product complies with its relevant harmonised European Norm.
The CE marking label for each product, including declared values, can be found at www.pilkington.com/CE

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SAFEHINGE SIMPLY DIFFERENT

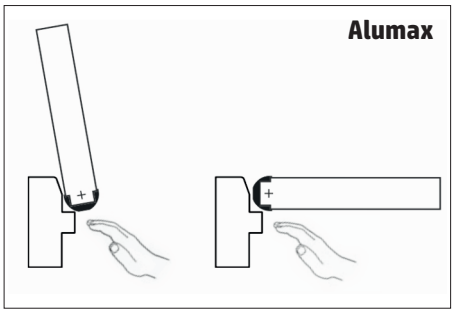
The industry standard for durable finger guards.

Engineered to last in high traffic environments. Designed for every project and budget.

FINGER GUARDS

INTEGRAL FINGER GUARD Alumax

Perfect for new builds and major refurbishments, our discreet integral finger guard offers unrivalled safety and durability.



Alumax designs out the problem of trapped fingers using pivots and a rounded door edge to minimise the gap between door and frame. As the door opens and shuts, this gap remains constant at just 2mm – too small for fingers to get into harm's way.

Once fitted, it will last the **lifetime of the door**, removing the need for regular replacements and saving between £500 and £1,000 per door over 25 years compared with plastic.

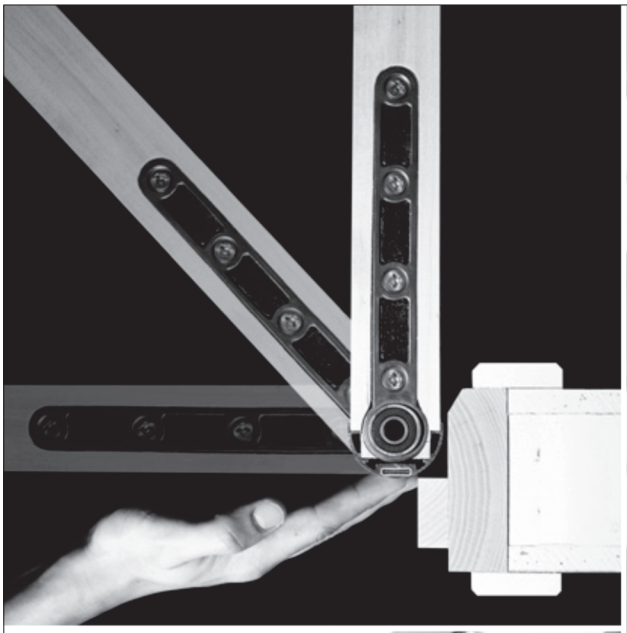
As well as providing **superior finger safety**, it **blends seamlessly** into any environment through its range of finishes, including timber finish and RAL colour.

The onsite adjustment also ensures that it's installed right first time – every time.

Patent protected (GB1902103, FR1902103, DE602006020281.4)

http://www.safehinge.com/alumax

SAFEHINGE



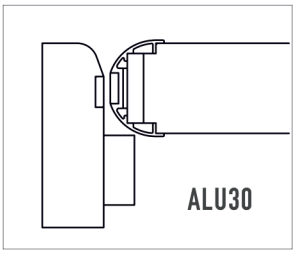
TECHNICAL AND SPECIFICATION INFORMATION

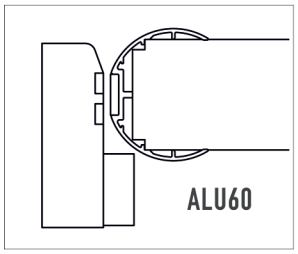
For more in-depth technical information, including user manuals and installation advice, please refer to the “Technical Tools” section on our website – **http://www.safehinge.com/alumax**

SAFEHINGE

TECHNICAL SUMMARY

	ALUMAX (ALU30)	ALUMAX (ALU60)	ALUMINI	ALUFAST
Finger guard description	Integral		Retrofit finger-ejecting	Retrofit extreme duty
Door type	Single / Double swing		Single swing	
Door thickness	44mm	54mm	Up to 54mm	
Max. opening angle	100º		180º	100º
Fire rating	NFR / FD30	FD60	As door	
Acoustic rating	Up to 32db	Up ro 38db	As door	
Supply lengths	2100mm and 2700mm*		1925mm	1800mm and 1925mm
Codes	See Technical & Manufacturing Guidelines document		Standard version up to 44mm doors (MINI - 1925) Extension pack for 54mm doors (MINI - PK2)	Two guiderail as standard FAST-G2-1800 or 1925 Three guiderail - extra strength FAST-G3-1800 or 1925
Finishes	Anodised silver RAL colours Timber effect		Anodised silver	
Frame head	48mm		As door	





http://www.safehinge.com/alumax

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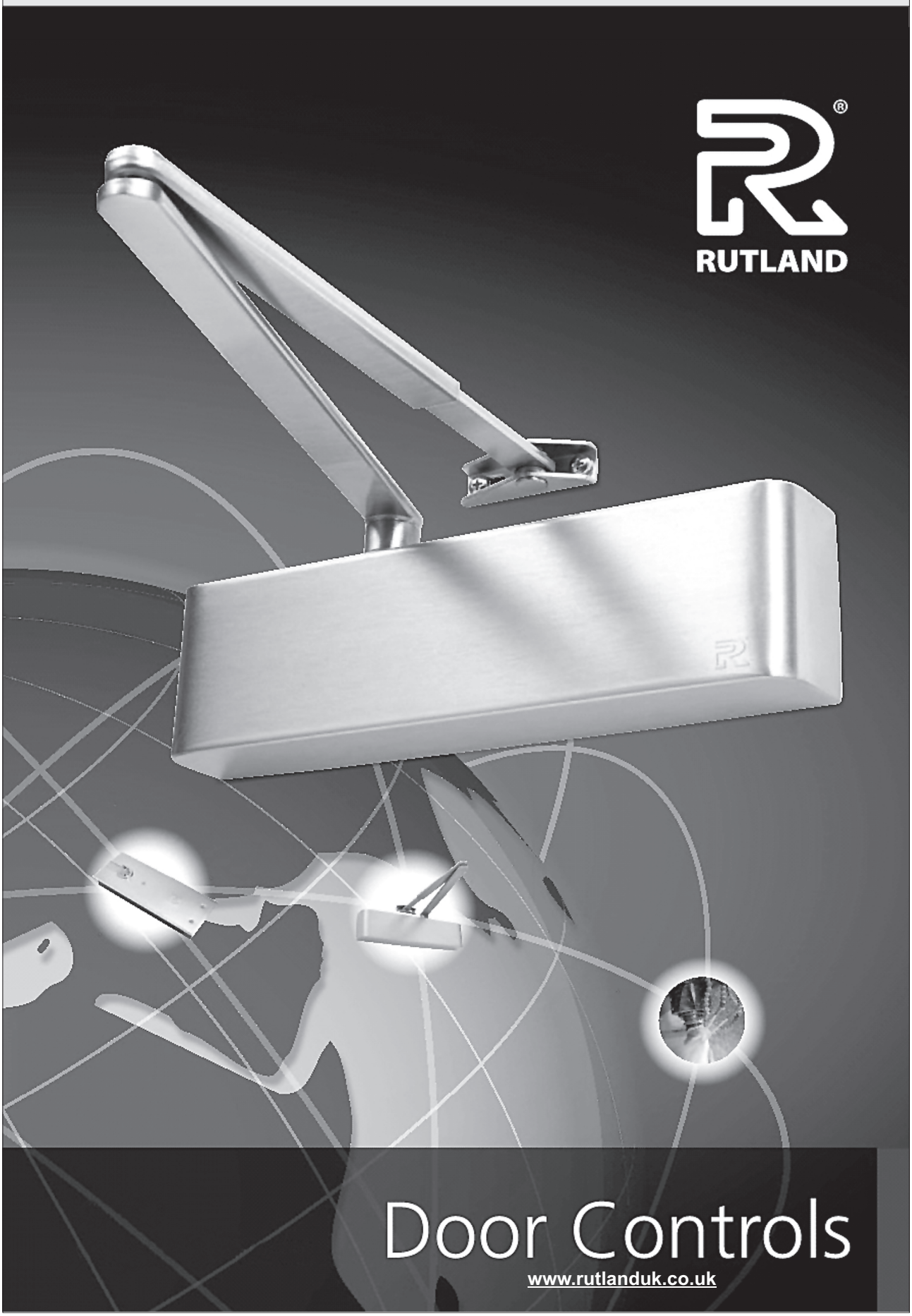
RUTLAND
Door Controls
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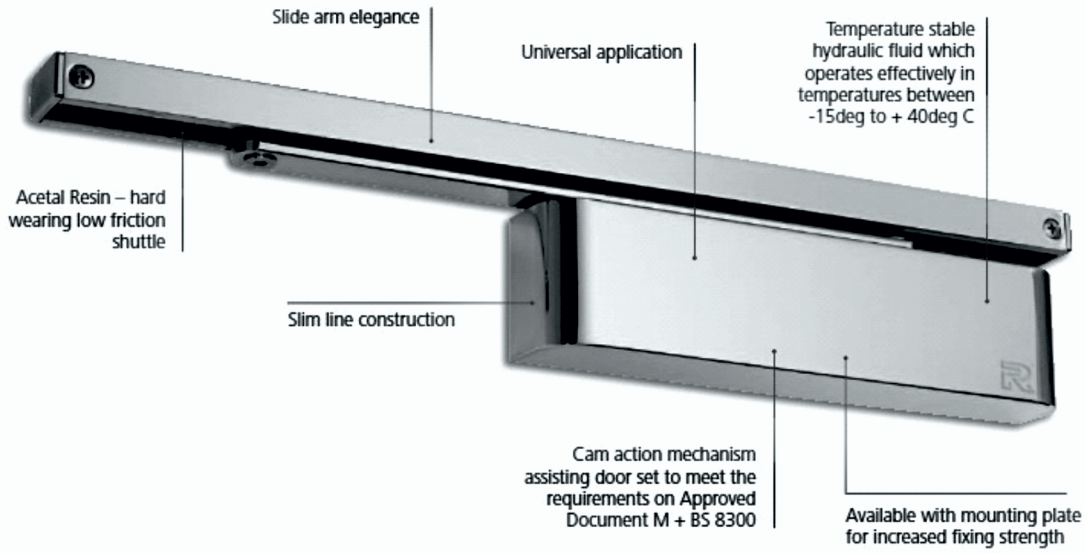
TS.11204

Surface Slide Arm Closer



FIRE CAT GLOBAL ACCREDITATION

See separate brochure for details

Product Overview

The Cam Action Door Closers, with their renown high efficiency and ease of opening, are what specifiers have come to learn and expect from Rutland door closers. Cam Actions have been used for decades in many and varied applications globally where the characteristics of the Cam, breed the performance, quality, reliability and design associated with Rutland.

TS.11204

RUTLAND

Surface Slide Arm Closer

Specification Overview

- Fire Tested up to 60 mins
- Max Door Weight up to 60kg
- Opening Angle 120°
- Max Door Width 950mm
- Universal Application
- Adjustable Closing Speed
- Power Size 3
- Adjustable Latch Speed
- 10 YEARS Guarantee
- DoP 11204CPR01.07.13
- Min Door 857mm fig30
- Rut Lock

Technical Information

BS EN 1154 Classification

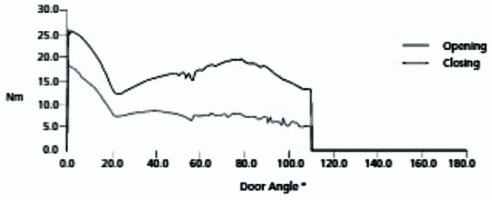
TS.11204 door closers have been independently tested to conform with the EN 1154 performance standard. They are CE marked and classified as follows:

3	8	3	1	1	3

BS EN 1634 Fire Test

TS.11204 door closers have been tested to EN 1634 Fire Pressure Test for, 30 and 60 minutes on a TFTDoor and TFCDoor.

Efficiency Graphs



Options

- Mechanical hold open slide rail *(Not to be used on fire doors)*
- EN2 & EN4
- Back check availble as a cushion stop in the rail

Options not covered by CE.

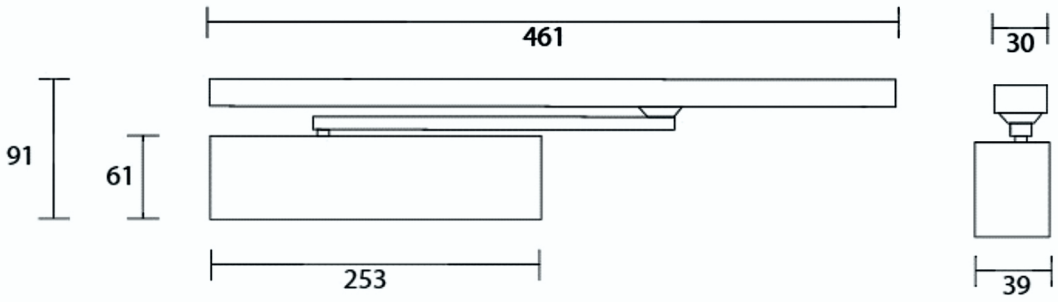
Other Benefits

- DDA door closer helping the less able (min door size 857mm)

bsi. ISO 9001 Quality Management FS 598473

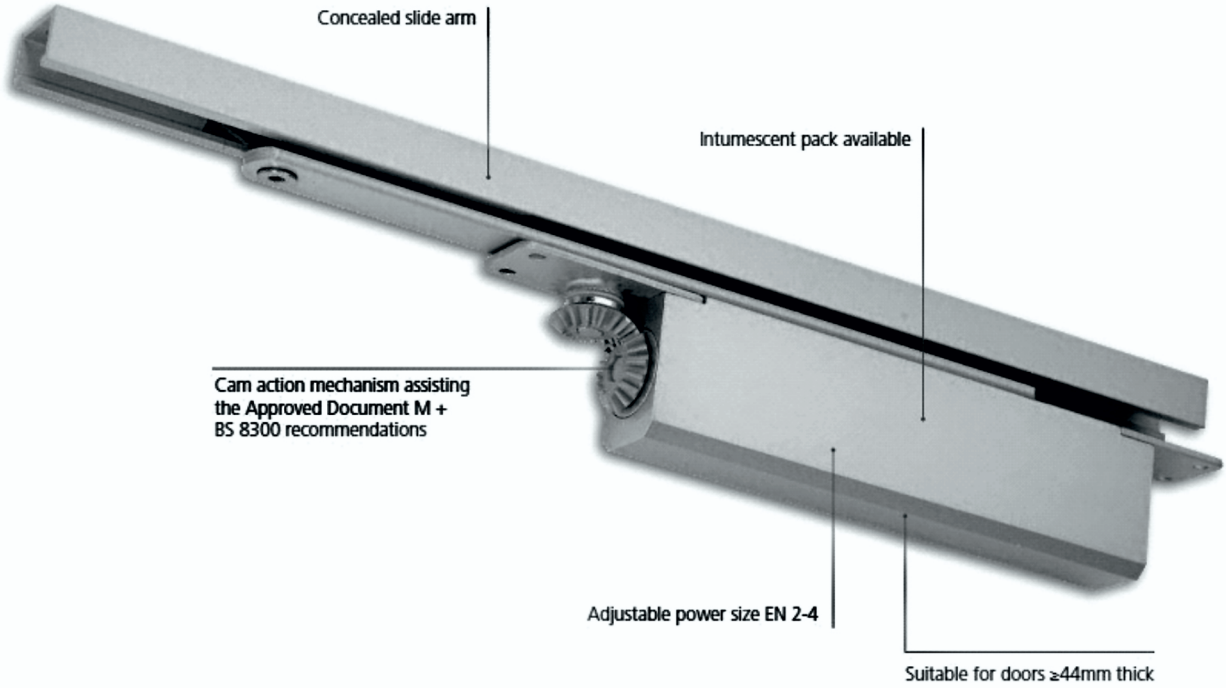
CE 1121

All dimensions shown are in mm.



ITS.11204

Concealed Slide Arm Closer

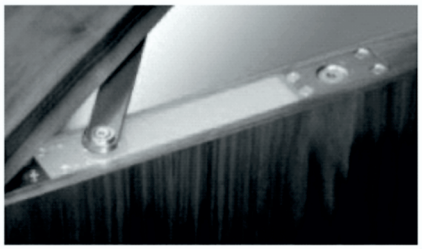


FIRE CERT
GLOBAL ACCREDITATION

See separate brochure for details

Product Overview

The Rutland ITS.11204 concealed door closer with cam and roller mechanism makes it an easy to open door closer helping to assist with Document M of the building regulations and the BS 8300 recommendations. This very slim - non-handed 2-4 power adjustable door closer is suitable for a variety of metal and timber doors for use in projects such as hospitals, care homes, schools, colleagues and other areas. Also helps in areas subject to vandalism as the unit is fully concealed when the door is closed.



ITS.11204

RUTLAND

Concealed Slide Arm Closer

Specification Overview

- Fire Tested up to 60 mins
- Max Door Weight up to 60kg
- Opening Angle 120°
- Max Door Width 950mm
- Universal Application
- Adjustable Closing Speed
- Power Size 3
- Adjustable Latch Speed
- Guarantee
- 11204CPR01.07.13
- Min Door 857mm fig30
- Rut Lock

Technical Information

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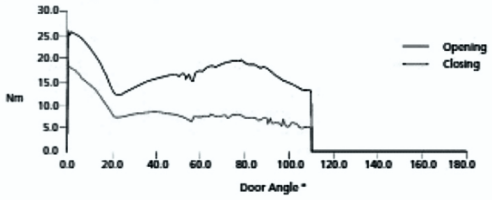


Options

- Mechanical hold open slide rail (*Not to be used on fire doors*)
- EN2 & EN4
- Back check availble as a cushion stop in the rail

Options not covered by CE.

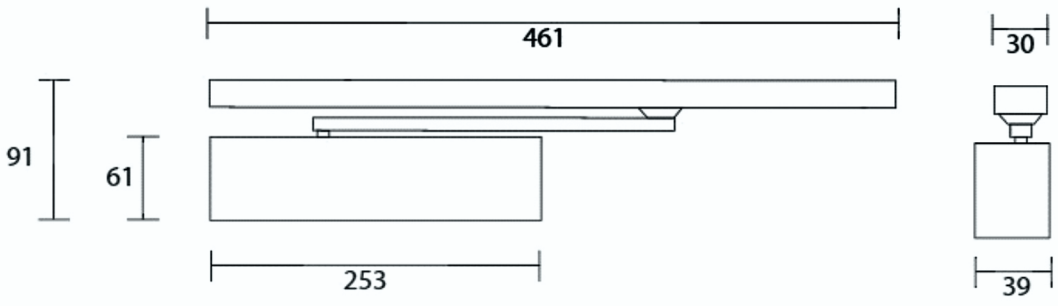
Other Benefits

- DDA door closer helping the less able (min door size 857mm)

bsi. ISO 9001 Quality Management FS 598473

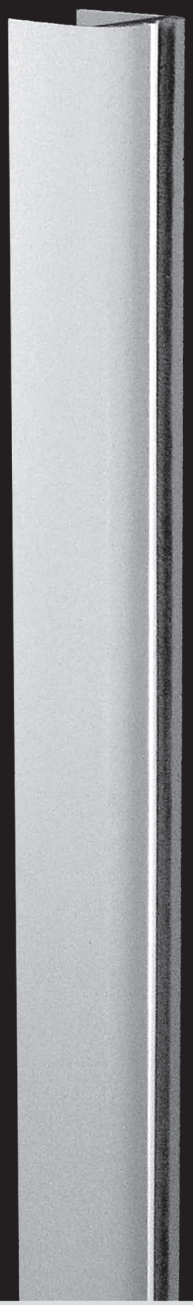
CE 1121

All dimensions shown are in mm.



HOMEBREW

C/S ACROVYN® DOOR EDGE PROTECTORS



Using C/S Acrovyn® Door Edge Protectors will help reduce damage and expensive repair costs to door edges.

Door Edge Protectors are available for non-fire rated and fire-rated doors and are easy to install to new or existing doors.

- High impact protection channel in through-colour 2mm thick Acrovyn sheet, with an 8mm thick toughened and recycled Acrovyn internal lipping and fire seal to match fire rating of the door
- Available in 30 solid Acrovyn colours
- Differentiates door edges for Approved Document M compliance
- Co-ordinates with Acrovyn® Kick Plates, Push Plates and Door Frame Protection
- Formed to suit radiused or square edged doors
- Available in widths to suit door thicknesses from 44 to 54mm
- Suitable for non fire rated and fire rated doors
- Supplied with fire and smoke seals tested up to 30 minutes and 1 hour to BS 476 part 22 and 31.1
- Easy to install to new and existing doors
- Acrovyn Door Edge Protectors have chamfered edges to provide a safe, smooth return on door face once fitted
- Standard door edge protector length 2200mm

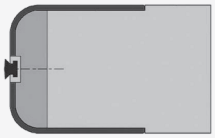
Construction Specialties™ Tel: 01296 652800 www.c-sgroup.co.uk

C/S ACROVYN® DOOR EDGE PROTECTORS

INSTALLATION

1.

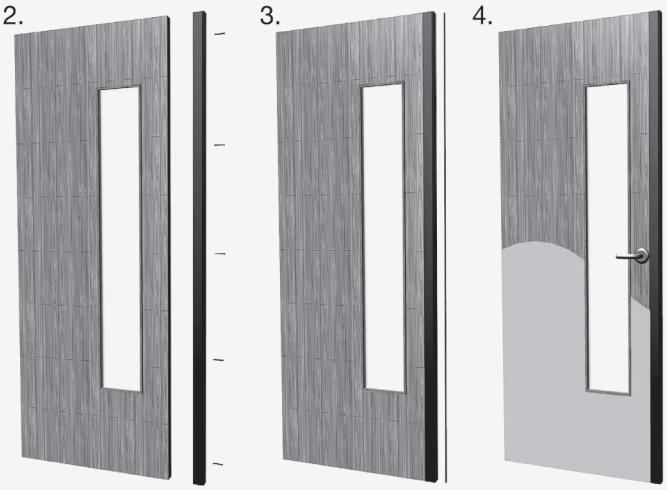
a - Acrovyn® Door Edge Protector on existing door.



Reduce door width and thickness on either side of the door to accommodate the Door Edge Protector

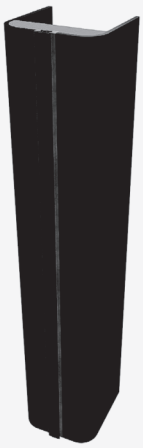
b - Acrovyn® Door Edge Protector and Kick Plates on new or existing door.

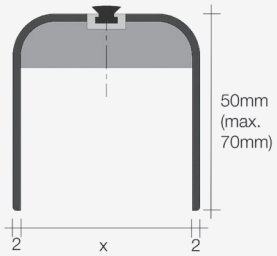
Flush finished door protector and plates



1. DOOR PREPARATION
   Remove door from door frame and remove ironmongery on door edges to be protected. Reduce door width and thickness as appropriate to accommodate Acrovyn® Door Edge Protectors and any Acrovyn® Kick Plates or Push Plates required (refer to drawing 1a. or 1b. above).
2. Cut Door Edge Protector to suit height of door, then align to door to mark and cut out for ironmongery. Cut as required.
   Position Door Edge Protector over door edge and using countersunk screws, fix the edge protector into place through the recess groove in the edge protector.
3. Remove the backing tape from the intumescent strip and insert into the recess groove. Press firmly.
4. Re-hang the door, re-fit the ironmongery and fit new Acrovyn® Kick Plates or Push Plates as required.

HOW TO ORDER





Please note the thickness of Acrovyn Sheet should be taken into account in your calculation of the Door Edge Protector width (please supply the internal dimension 'x').

The following details are required to enable us to process your order for Acrovyn® Door Edge Protectors:

No. required	
Acrovyn colour reference	
Fire rating - 30min., 60min. or NFR	
Length of Door Edge Protector (max. 2200mm)	
Internal width of Door Edge Protector ('x')	
Leg length 'y' (50mm as standard, max. 70mm)	
Radius or square edge	

Please also include delivery and invoice addresses and contact name and number.

Construction Specialties™

Construction Specialties (UK) Ltd, 1010 Westcott Venture Park, Westcott, Bucks HP18 0XB
T: +44 (0)1296 652800 F: +44 (0)1296 652888 E: info@c-sgroup.co.uk W: www.c-sgroup.co.uk