WARM SPRINGS

DOOR CORE PRODUCTS

Technical Manual

Introduction:

This manual is intended for use as a guidance document for the benefit of users of Warm Springs Composite Products high performance fire rated door and frame materials.

The basic door constructions rely on the use of highly fire resistant mineral based products consisting of a light weight core material retained within a higher density stiles and rails to provide for exceptional stability under fire conditions and for the secure fixing of hardware.

WSCP based doors can be used with a wide range of Listed frame designs to satisfy both Neutral (*or negative*) pressure or Positive pressure specification requirements.

WSCP also provide for various Listed frame designs and components.

WSCP constructions provide for flexibility with regard to design applications including an ability to accommodate glazing options and various decorative finishes.

WSCP special features include stile designs to accommodate concealed vertical rod securing devices and a unique bracket system to provide for a quick and efficient system for the installation of frame assemblies.

Other constructions / materials are available from WSCP including designs to meet specification requirements for 2700mm (9ft.) fire rated doors.

Pages in this manual that display the Intertek logo describe and illustrate elements culled from the Intertek Listing document for Warm Springs Composite Products.

For further information please visit: www.wscp.com

Sponsored by:

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Station Approach,
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Warm Springs Composite Products
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United States of America

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CONTENTS

VARIATIONS:

Due to the constant development of Warm Springs Door Core products, various sections of this manual may be amended from time to time.
The variations may take the form of Information Sheets or the replacement of complete sections.
This page provides a means for recording variations.

Variation Ref:	Date	Section	NOTES

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Testing Standard(s):	:UBC 7-2 (1997):UBC 7-2 (1994):CAN / ULC S104 1980 (R1985):ASTM E2074 (2004):UL 10(b) (2008):NFPA 252 (2008):UL 10(c) (2001):UL 10(b) Revision 1 (2009):UL 10(c) (2009):CAN / ULC S104 (2010):NFPA 252 (2012)
Product:	Warm Springs 45-90 Minute Flush Doors

ATM for Report 495-1571, 495-1677, 3143292, 3175689, 100357579, 100527420, 100618964

ATM Issue Date: 02/06/2017

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Product:	Warm Springs 20-90 Min Fire Door Frame

ATM for Report 3060476(b), 3064457, 3093354, 3096495, 3098441COQ, 3106469COQ, 3133363COQ, 3145801COQ, 3149053COQ, 3182154COQ, 100359573COQ, 100527420COQ, 100965966COQ, 100908725COQ, 101473027COQ; 101879113COQ; 100618964COQ, 102576295COQ-003A

ATM Issue Date: 02/06/2017

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Testing Standard(s):	:UL 10(c) (2009):UL 10(b) (2009):CAN / ULC S104 (2010):NFPA 252 (2012)
Product:	Warm Springs 60-90 minute Single Swing Sound Transmission Doorset

ATM for Report G102046520, 102576295COQ-003A, 102576295COQ-003B

ATM Issue Date: 02/06/2017

Section 1: Fire & Smoke Testing & Certification

Section 1 provides for brief guidance with regard to the method of testing and certification systems used in the United States of America.

This section also provides for general guidance in respect of Warm Springs Composite Products methods for demonstrating compliance with the certification of their products.

North American Code Compliance - NFPA 80 - Fire Doors and Frames:

Door manufacturers of Fire Rated Openings (*Fire Doors*) in the United States of America and Canada are regulated by specific testing and manufacturing criteria that is outlined by reference to the following standards:

UBC 7-2 Universal Building Code 7-2 / Positive Pressure.
UL 10-B Underwriters Laboratory 10B / Neutral Pressure.
UL 10-C Underwriters Laboratory 10C / Positive Pressure.
CAN/ULC S104 Underwriters Laboratory - Canada - S104.

These test standards are fundamentally identical with regard to testing methods and performance criteria and are used by Certification and Testing Bodies to provide for performance assurances.

In the United States of America Certification is referred to as 'Listing' with the certification documents being referred to as 'Listing Reports'.

There are a number of Certification Agencies that can provide for these services with perhaps the most widely known being:

Intertek Testing Services (*also known as ITS and Warnock Hersey*). Intertek
Underwriters' Laboratories (*abbreviated as 'UL'*) UL

All components and banded mineral cores manufactured by Warm Springs Composite Products (*WSCP*) are listed and certified by Intertek Testing Services. WSCP are compliant with the quality control procedures described by reference to the UBC 7-2 Testing Standard with inspections (*audits*) carried out by Intertek on a regular basis. Products manufactured by WSCP under these quality control procedures can therefore be labelled using the '*Intertek Warnock Hersey*' approved labelling system.

NOTE: Warm Springs Composite Products have also been tested to British Standards in the United Kingdom and are 'Q' Mark certified for use in Fire Rated Openings by Exova BM TRADA. Approved British Standard applications are the subject of a separate technical manual.

Fire Testing:

Fire Door Assemblies are manufactured and installed in accordance with NFPA 252 (*National Fire Protection Association standard 252*) 'Standard Methods of Test of Door Assemblies'.

This standard provides strict guidelines and precise instructions with regard to the limits and parameters for the testing of Doors, Frames, Door Leaves and Door Sets.

Testing requires the assembly to be installed in either a block wall, or a steel or wood stud wall with fire rated gypsum board panels.

All applicable hardware to be tested must be installed as required by NFPA 80 and as required by reference to the hardware manufacturers' fitting instructions.

The specimen(s) are subjected to a fire endurance test in an approved testing furnace for the desired time duration before being removed from the furnace and subjected to a hose stream test which simulates falling debris and fire fighters actions. The water stream must not allow the door(s) to buckle, slump or break open (*including double doors*).

Test reports are generated by the testing agency with new or additional specifications added to Listings. The on-going test programme carried out by WSCP provides for the frequent extension of Listing approvals in respect of opening dimensional parameters, hardware, glazing options and new products.

Section 2: Fire & Smoke Rated Products US Categories

Section 2 describes the 'Categories' system use in the United States of America for determining the fire & smoke performance ratings for door related products.

Fire & Smoke Rated Products - Categories:

The North American system is based upon all components being tested and certified (Listed). This allows for a degree of interchangeability when using listed and labeled products. It is however vitally important to check the component Technical Data Sheet (TDS) or Listing to determine compatibility and precisely how the component should be used with other elements of a multi component construction such as a door assembly.

The listing agencies have agreed on the following definitions of categories that relate to the construction and installation of fire doors to meet positive pressure and smoke control requirements. For reference, please see the listing below for a definition of each category:

CATEGORY 'A' – DOORS – No additional edge-sealing system required
Concealed intumescent is built into the door leaf. This category includes doors which do not require the use of special frames (*Category C - Proprietary*) or an add-on edge seal systems (*Category G*) to meet Positive Pressure fire test requirements. See individual listings for requirements for labeling with a Smoke & Draft Control Mark. All assemblies are identified by a label or marking bearing the wording “Listed (Product)”, a time interval, temperature rise (*if applicable*), a serial number and the listing agency's certification mark. (*Unless otherwise specified, all fire doors have a nominal thickness of 1-3/4”*). (*44.5mm*)

CATEGORY 'B' – DOORS – Additional edge-sealing system required
This category includes doors which must be installed in a frame that has incorporated a built-in intumescent system (*Category C - Proprietary*) or in a Category C - Standard (*Steel*) fire rated frame using an add-on edge seal systems (*Category G*) to meet Positive Pressure fire test requirements. The meeting stiles of pairs of Category 'B' doors must also be fitted with Listed intumescent seals, either concealed under the wood lipping or surface applied Category 'G' seals meeting the required fire rating. See individual listings for requirements for labeling with a Smoke & Draft Control Mark. All assemblies are identified by a label or marking bearing the wording “Listed (Product)”, a time interval, temperature rise (*if applicable*), a serial number and the listing agency's certification mark. (*Unless otherwise specified, all fire doors have a nominal thickness of 1-3/4”.*) (*44.5mm*)

CATEGORY 'C'– FRAMES
This category includes two types of frame designations which have been evaluated for use in positive pressure assemblies.

- **Standard' Frames** – Refer to Listed and Labeled Hollow Metal or Steel frames that are normally constructed out of 16-22 gauge steel (*1.6mm-0.8mm*). The Steel is either roll formed or bent in break presses to form the shape of the frames. Then the frame legs and header are either welded together or assembled per the frame manufacturers installation requirements.

- **Proprietary' Frames** – Refer to specialty frame systems, such as the Warm Springs WSCP FRX Frame Systems, which have been tested and certified for Positive Pressure applications.

NOTE: Frames listed under existing non-positive pressure standards may be used in positive pressure assemblies, as shown in the door listings under Category A or B, or when an edge-sealing system is used per Category G. All other frames will be listed in Category C. All assemblies are identified by a label or marking bearing the wording, “Listed (Product)”, a time interval, a serial number and the listing agency's certification mark.

Fire / Smoke Rated Products - Categories contd.:

CATEGORY 'D' – DOOR/FRAME ASSEMBLIES
This category includes doors and frames that are labeled for positive pressure compliance as an assembly. All assemblies are identified by a label or marking bearing the wording “Listed (Product)”, a time interval, temperature rise (*if applicable*), a serial number and the listing agency's certification mark. (*Unless otherwise specified, all fire doors have a nominal thickness of 1-3/4”.*) (*44.5mm*)

CATEGORY 'E' – HARDWARE
All hardware must either be NFPA 80 approved, while also complying with WSCP Fire Rated Door and/or Fire Rated Frame Machining Specifications, **or** have been specifically tested to work in our assembly and specified in the Listing reports.

Note: Hardware may be referred to by 'generic type' with no specific brand name. (e.g. Cylindrical Lock Set, Mortise Lock Set, Standard Hinges, etc.) These may not require an entry in the Listings but may be defined by way of dimensional limitations or in other ways for use with particular door/frame constructions.

CATEGORY 'F' – Glazing Kits (*Lites*)
Products listed in this category have been evaluated for use to satisfy Positive Pressure specifications as defined by the Listing. The Listing will generally relate the particular glazing system to particular door construction types and reference must be made to the glazing system Technical Data Sheet (*TDS*) to determine limitations and other requirements.

NOTE 1: Glass and glazing material used with the glazing kits do not require a positive pressure marking but must otherwise be marked as fire rated to the required performance. The listed maximum sizes for the glazing system may be at variance with the maximum sizes approved for the particular door construction. In this event, the smaller dimensions must apply.

NOTE 2: All glazing system assemblies are identified by a label or otherwise marked showing the Listing agency's certification mark.

CATEGORY 'G' – EDGE-SEALING SYSTEMS
Products listed in this category include intumescent type systems that are surface-applied (*such as kerf fixed or attached using adhesive or mechanical fixings*) to the door or the frame. These systems must be certified for use with mineral core doors, while meeting the listed fire rating. This Category includes meeting edge seals for use in pair and double egress assemblies. All edge-sealing systems are identified by a label or marking bearing the listing agency's certification mark.

CATEGORY 'H' – SMOKE AND DRAFT CONTROL GASKETING
Gasketing material that are added to a door assembly to comply with the requirements of UL 1784. Products listed in this category include perimeter and threshold sealing that restricts the flow of air or airborne particles (*smoke*) from one side of the door assembly to the other. These seals / gaskets may be surface applied (*attached using adhesives, kerf fixed or alternative mechanical fixings*) to the door leaf and / or the frame. The systems are evaluated in accordance with Uniform Building Code Ref: UBC 7-2, Part II.

NOTE: This category covers gasket systems that have been evaluated for use in Positive Pressure Assemblies but they do not provide for an alternative to Category 'G' edge sealing systems. All smoke and draft control gasket systems are identified by a label or are otherwise marked by use of the Listing Agency's certification mark.

CATEGORY 'J' – Gaskets (*other*)
Gasketing materials that are added to a door assembly for purposes other than Category 'G' Edge Seals and Category 'H' Smoke and Draft Control Gaskets. They are used for purposes such as weather stripping, sound control, etc. Category 'J' Gasketing Materials have only been investigated to positive pressure with respect that they do not contribute to flaming during the fire test. They have not been evaluated for any contribution for a door assembly to help meet the positive pressure requirements.

Section 3: Thermal-Lite & WSCP-412 Door Constructions - Minimum Approved Fire Door Specifications

Section 3 describes the minimum specifications required for the use of WSCP components for manufacture of fire doors to comply with the Intertek Door Construction Listings based upon the use of Thermal-Lite and WSCP-412 cores. The minimum construction requirements to comply with the Listing specifications are given by reference to ***Figs. 3.1 ~ 3.10.***

All door construction components must be bonded together on all faces and edges using Listed adhesives. ***See Section 8 - Listed Adhesives.***

Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing.

It is important to consider hardware requirements in advance of manufacture of the door leaf particularly with regard to the use of load bearing items e.g. Single action overhead closers without bolt through fixings, surface fitted emergency release hardware etc.
NOTE: Thermal-Lite and WSCP-412 cores are low density. High density Tectonite is required to provide for the secure fixing of load bearing hardware unless bolt through fixings are used.

Pre manufacture planning must also take into consideration any requirements for glazing, wire ways (*raceways*) or the like that may require some modification to the basic constructions described in this Section. ***See Section 5 - Approved Variants.***

WSCP can provide special profile Tectonite stiles where there is a requirement for the use of concealed vertical rod (CVR) securing devices. Designs using this facility may also require the use of increased height rails. ***See Section 10 Hardware for further guidance.***

WSCP door constructions can be glazed, including provision for multiple glazed apertures. Listing requirements related to glazing are addressed by reference to ***Section 5 - Approved Variants.***

WSCP fire rated doors must be used with Listed frame designs suitable for use with mineral core doors. ***See Sections 6 & 7 - WSCP Frames.***

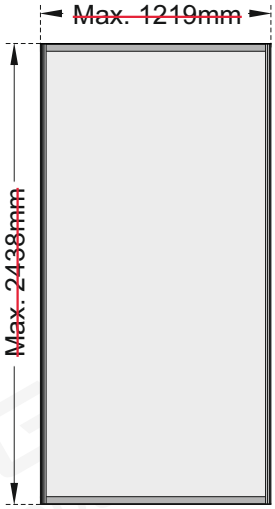
NOTE 1: WSCP Cat. A constructions can be used with listed and labelled (metal) frames for positive pressure applications. See Sections 6 - Frames.

NOTE 2: WSCP Cat. A door constructions can be used with WSCP FRX 'A' Series frames for positive pressure applications but with the vertical edge banding reduced from 6.3mm to 3.1mm. See Sections 6 & 7 - WSCP Frames.

NOTE 3: WSCP Cat. B door constructions can be used with WSCP FRX 'B' Series frames for positive pressure applications. See Sections 6 & 7 - WSCP Frames.

NOTE 4: WSCP Cat. B door constructions can be used with WSCP FRX 'A' Series frames for neutral pressure applications. See Sections 6 & 7 - WSCP Frames.

Thermal-Lite Core 60min. - Anti-Fire Stiles - Up to 2438mm (8ft. high): *Fig.3. 1*



Thermal-Lite Core up to 60min.
Thermal-Lite single leaf single swing doors up to 2438mm (8ft.) high x 1219mm (4ft.) wide:

Core: Up to 3 pieces Thermal-Lite core - ***See Section 4 - Fig. 4.1***

Stiles - Category 'A' doors: 11mm Anti-Fire composite + approved intumescent + 11mm Anti-Fire composite board + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.3***

Stiles - Category 'B' doors: 2No. 11mm layers Anti-Fire Composite board + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.4***

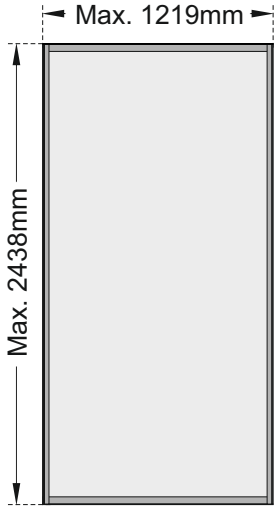
Top rail - Category 'A' doors: Min. 38mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.15***

Top rail - Category 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.16***

Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.21***

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. ***See Section 5 - Fig. 5.1***

Thermal-Lite Core 60min. - Tectonite Stiles - Up to 2438mm (8ft. high): *Fig. 3.2*



Thermal-Lite Core up to 60min.
Thermal-Lite single leaf single swing doors up to 2438mm (8ft.) high x 1219mm (4ft.) wide:

Core: Up to 3 pieces Thermal-Lite core - ***See Section 4 - Fig. 4.1***

Stiles - Category 'A' doors: Min. 25.4mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.5***

Stiles - Category 'B' doors: Min. 25.4mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.-
See Section 4 - Fig. 4.6

Top rail - Category 'A' doors: Min. 38mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.15***

Top rail - Category 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See Section 4 - Fig. 4.16

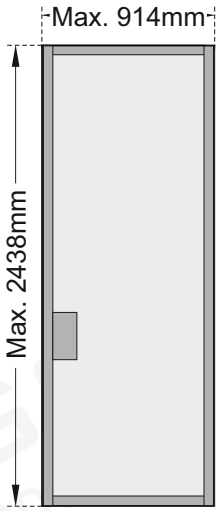
Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.21***

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. ***See Section 5 - Fig. 5.1***

Single Leaf Door Assemblies
Thermal-Lite & WSCP-412

Thermal-Lite Core 90min. - Tectonite Stiles - Up to 2438mm (8ft. high):

Fig. 3.3



Thermal-Lite Core up to 90min
Thermal-Lite single leaf single swing doors up to 2438mm (8ft.) high x 914mm (3ft.) wide:

Core: Up to 3 pieces Thermal-Lite core - ***See Section 4 - Fig. 4.1***

Stiles - Category 'A' doors: Min.51mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge lipping. ***See Section 4 - Fig. 4.7***

Stiles - Category 'B' doors: Min. 51mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge lipping.- ***See Section 4 - Fig. 4.8***

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.17***

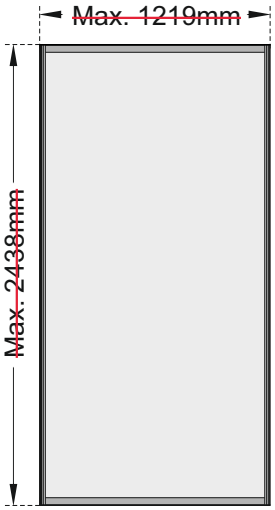
Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See Section 4 - Fig. 4.18

Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.22***

Additional Requirement: This design must incorporate a min. 250x127mm Tectonite lock block. Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing.
See Section 5 - Fig. 5.1

~~WSCP-412 Core 60min. - Anti-Fire Stiles - Up to 2438mm (8ft. high):~~

~~*Fig. 3.4*~~



~~**WSCP-412 Core up to 60min**~~
~~WSCP-412 single leaf single swing doors up to 2438mm (8ft.) high x 1219mm (4ft.) wide:~~

~~**Core:** Up to 5 pieces WSCP-412 core - ***See Section 4 - Fig. 4.2***~~

~~**Stiles - Category 'A' doors:** 11mm Anti-Fire composite + approved intumescent + 11mm Anti-Fire composite board + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.3***~~

~~**Stiles - Category 'B' doors:** 2No. 11mm layers Anti-Fire Composite board + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See Section 4 - Fig. 4.4~~

~~**Top rail - Category 'A' doors:** Min. 38mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.15***~~

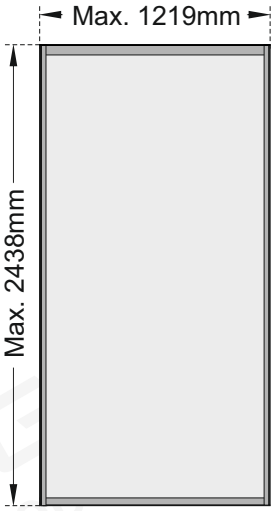
~~**Top rail - Category 'B' doors:** Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See Section 4 - Fig. 4.16~~

~~**Bottom Rail Category 'A' & 'B' doors:** Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.21***~~

~~**Additional Requirement:** Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. ***See Section 5 - Fig. 5.1***~~

WSCP-412 Core 90min. - Tectonite Stiles - Up to 2438mm (8ft. high):

Fig. 3.5



WSCP-412 Core up to 90min

WSCP-412 single leaf single swing doors up to 2438mm (8ft.) high x 1219mm (4ft.) wide:

Core: Up to 5 pieces WSCP-412 core - ***See Section 4 - Fig. 4.2***

Stiles - Category 'A' doors: Min. 25.4mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.5***

Stiles - Category 'B' doors: Min. 25.4mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See Section 4 - Fig. 4.6***

Top rail - Category 'A' doors: Min. 38mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.15***

Top rail - Category 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.16***

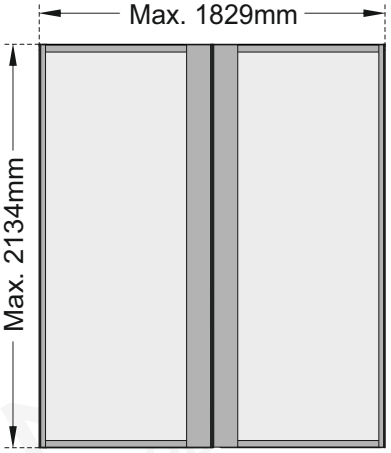
Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.21***

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. ***See Section 5 Fig. 5.1***

Double Leaf (pairs) Door Assemblies
Thermal-Lite & WSCP-412

Thermal-Lite Core 60min. - Tectonite Stiles - Pairs - 3 Point Latching. Up to 2134mm (7ft. high):

Fig. 3.6



Thermal-Lite Core up to 60min
Thermal-Lite double leaf (pairs) single swing doors up to 2134mm (7ft.) high x 1829mm (6ft.) o/a wide - with three point latching:

Core: Up to 3 pieces Thermal-Lite core - each leaf - ***See Section 4 - Fig. 4.1***

Hanging Stiles - Category 'A' doors: Min. 25.4 Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.5***

Meeting Stiles - Category 'A' doors: Min. 127mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.9***
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Hanging Stiles - Category 'B' doors: Min. 25.4mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See Section 4 - Fig. 4.6***

Meeting Stiles - Category 'B' doors: Min. 127mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^{3}density timber edge band / lipping. ***See Section 4 - Fig. 4.10***
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Top rail - Category 'A' doors: Min. 38mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite top rail must be increased from 38mm to 96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.15 & 4.19.***

Top rail - Category 'B' doors: Min. 38mm WSCP Tectonite. ***NOTE: The Tectonite top rail must be increased from 38mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.16 & 4.20.***

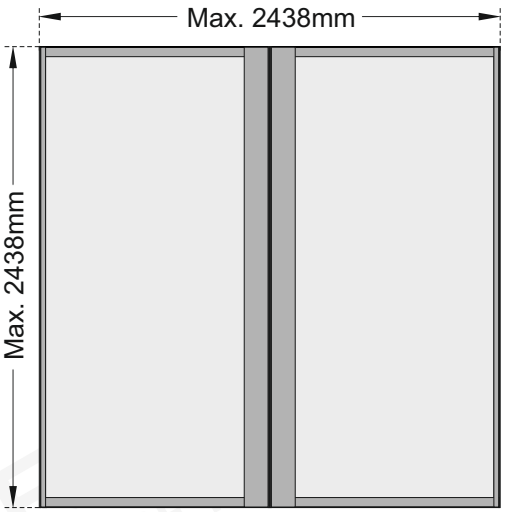
Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite bottom rail must be increased from 38mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.21 & 4.23.***

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. ***See Section 5 - Fig. 5.1***

NOTE: Category 'B' doors described above are suitable for neutral pressure applications. For positive pressure applications used with WSCP Category 'C' Proprietary Frames, (OR alternative listed frames) - approved intumescent seals must added at the meeting stiles of pairs of doors. See Section 4 Door Leaf Construction Details.

WSCP-412 Core 60min. - Tectonite Stiles - Pairs - 3 Point Latching. Up to 2438mm (8ft. high):

Fig. 3.7



WSCP-412 Core up to 60min

WSCP-412 double leaf (pairs) single swing doors up to 2438mm (8ft.) high x 2438mm (8ft.) o/a wide - with three point latching:

Core: Up to 5 pieces WSCP-412 core - each leaf - ***See Section 4 - Fig. 4.2***

Hanging Stiles - Category 'A' doors: Min. 25.4mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.5***

Meeting Stiles - Category 'A' doors: Min. 127mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.9***
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Hanging Stiles - Category 'B' doors: Min. 25.4mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See Section 4 - Fig. 4.6***

Meeting Stiles - Category 'B' doors: Min. 127mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.10***
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite top rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.17 & 4.19.***

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite. ***NOTE: The Tectonite top rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.18 & 4.20.***

Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite bottom rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.22 & 4.23.***

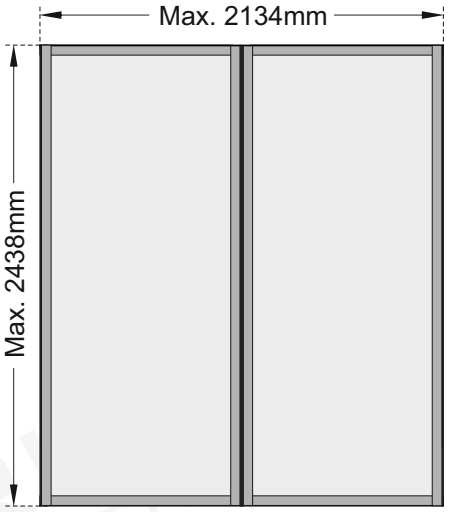
Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. ***See Section 5 - Fig. 5.1***

NOTE: Category 'B' doors described above are suitable for neutral pressure applications. For positive pressure applications used with WSCP Category 'C' Proprietary Frames, (OR alternative listed frames) - approved intumescent seals must added at the meeting stiles of pairs of doors. See Section 4 Door Leaf Construction Details.

Double Leaf (pairs) Door Assemblies
Thermal-Lite & WSCP-412

Thermal-Lite Core 60min. - Tectonite Stiles - Pairs - 4 Point Latching. Up to 2438mm (8ft. high):

Fig. 3.8



Thermal-Lite Core up to 60min
Thermal-Lite double leaf (pairs) single swing doors up to 2438mm (8ft.) high x 2134mm (7ft.) o/a wide - with four point latching:

Thermal-Lite Core: Up to 3 pieces Thermal-Lite core - each leaf - ***See Section 4*** *- Fig. 4.1*

Hanging Stiles - Category 'A' doors: Min. 51mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See Section 4 *- Fig. 4.7*

Meeting Stiles - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See Section 4 *- Fig. 4.11*
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Hanging Stiles - Category 'B' doors: Min. 51mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See Section 4*** *- Fig. 4.8*

Meeting Stiles - Category 'B' doors: Min. 51mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4*** *- Fig. 4.12*
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite top rail must be increased from 51mm to Min. 96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.17 & 4.19.***

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite. ***NOTE: The Tectonite top rail must be increased from 51mm to Min. 96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.18 & 4.20.***

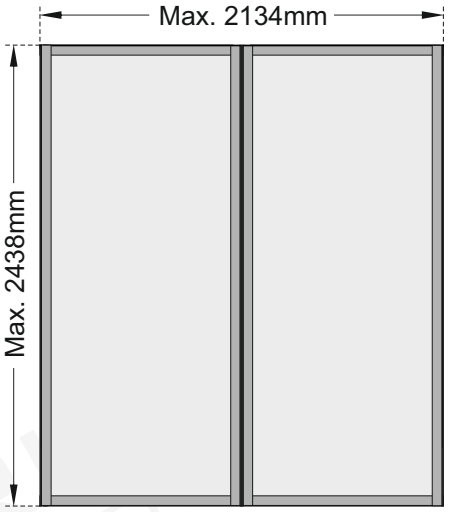
Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite bottom rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.22 & 4.23.***

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. Additional Tectonite blocking must be added to the door structure to suit load bearing hardware fittings and the required 4 point latching system. ***See Section 5*** *- Fig. 5.1*

NOTE: Category 'B' doors described above are suitable for neutral pressure applications. For positive pressure applications used with WSCP Category 'C' Proprietary Frames, (OR alternative listed frames) - approved intumescent seals must added at the meeting stiles of pairs of doors. See Section 4 Door Leaf Construction Details.

WSCP-412 Core 60min. - Tectonite Stiles - Pairs - 4 Point Latching. Up to 2438mm (8ft. high):

Fig. 3.9



WSCP-412 Core up to 60min

Thermal-Lite double leaf (pairs) single swing doors up to 2438mm (8ft.) high x 2134mm (7ft.) o/a wide - with four point latching:

WSCP-412 Core: Up to 5 pieces WSCP 412 core - each leaf - ***See Section 4*** *- Fig. 4.2*

Hanging Stiles - Category 'A' doors: Min. 51mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4*** *- Fig. 4.7*

Meeting Stiles - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4*** *- Fig. 4.11*
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Hanging Stiles - Category 'B' doors: Min. 51mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See Section 4*** *- Fig. 4.8*

Meeting Stiles - Category 'B' doors: Min. 51mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4*** *- Fig. 4.12*
NOTE: See Section 5 Pages 5.6 & 5.7 Figs. 5.10 & 5.11 for details of WSCP special CVR hardware Tectonite stiles.

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite top rail must be increased from 51mm to Min. 96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4*** *- Fig. 4.17 & 4.19.*

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite. ***NOTE: The Tectonite top rail must be increased from 51mm to Min. 96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4*** *- Fig. 4.18 & 4.20.*

Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite bottom rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4*** *- Fig. 4.22 & 4.23.*

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. Additional Tectonite blocking must be added to the door structure to suit load bearing hardware fittings and the required 4 point latching system. ***See Section 5*** *- Fig. 5.1*

NOTE: Category 'B' doors described above are suitable for neutral pressure applications. For positive pressure applications used with WSCP Category 'C' Proprietary Frames, (OR alternative listed frames) - approved intumescent seals must added at the meeting stiles of pairs of doors. See Section 4 Door Leaf Construction Details.

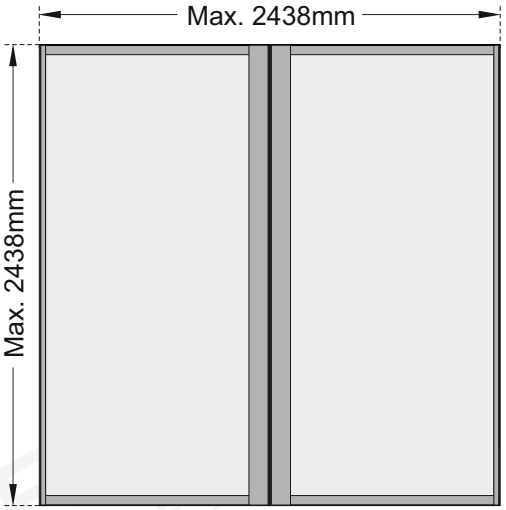
Double Leaf (pairs) Door Assemblies
Thermal-Lite & WSCP-412

WSCP-412 Core 90min. - Tectonite Stiles - Pairs - 4 Point Latching. Up to 2438mm (8ft. high):

Fig. 3.10

WSCP-412 Core up to 90min

WSCP-412 double leaf (pairs) single swing doors up to 2438mm (8ft.) high x 2438mm (8ft.) o/a wide - with four point latching:



Core: Up to 5 pieces WSCP-412 core - each leaf - ***See Section 4 - Fig. 4.2***

Hanging Stiles - Category 'A' doors: Min. 25.4mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.5***

Meeting Stiles - Category 'A' doors: Min. 101mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.13***
NOTE: See Section 5 Page 5.7 Fig. 5.11 for details of WSCP special CVR hardware Tectonite stiles used with Adams Rite CVR-LBR hardware.

Hanging Stiles - Category 'B' doors: Min. 25.4mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.6***

Meeting Stiles - Category 'B' doors: Min. 101mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 4 - Fig. 4.14***
NOTE: See Section 5 Page 5.7 Fig. 5.11 for details of WSCP special CVR hardware Tectonite stiles used with Adams Rite CVR-LBR hardware.

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite top rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.17 & 4.19.***

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite. ***NOTE: The Tectonite top rail must be increased from 51mm to Min. 96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.18 & 4.20.***

Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***NOTE: The Tectonite bottom rail must be increased from 51mm to Min.96mm for door fitted with Concealed Vertical Rod (CVR) hardware. See Section 4 - Fig. 4.22 & 4.23.***

Additional Requirement: Further modifications by the use of variations to stile and rail dimensions and / or the use additional blocking may be necessary to suit particular applications and / or to accommodate hardware and glazing. Additional Tectonite blocking must be added to the door structure to suit load bearing hardware fittings and the required 4 point latching system. ***See Section 5 - Fig. 5.1***

NOTE: Category 'B' doors described above are suitable for neutral pressure applications. For positive pressure applications used with WSCP Category 'C' Proprietary Frames, (OR alternative listed frames) - approved intumescent seals must added at the meeting stiles of pairs of doors. See Section 4 Door Leaf Construction Details.

Section 4: Basic Door Leaf Construction Details - Core Assembly Options - Stiles & Rails -

Section 4 illustrates approved basic construction details for the manufacture of Thermal-Lite and WSCP-412 core door designs with Anti-Fire or Tectonite stiles and rails.

The use of edge banding to the bottom edge of Category 'A' or 'B' doors is a general optional variant to the basic listing requirements.

The use of edge banding to the top edge of Category 'B' doors is a general optional variant to the basic listing requirements.

Tectonite stile and rail dimensions can be increased (*but not decreased*) to suit manufacturers requirements.

Tectonite stile and rail dimensions should be increased, (*or additional Tectonite blocking should be added*) where necessary to accommodate hardware or other load bearing additions.

Special profile Tectonite stiles should be used where the doors are secured using Concealed Vertical Rod (*CVR*) devices.

Hardwood edge banding to hanging stiles *(and closing stiles for single leaf door assemblies):*

- ***WSCP Cat. A door constructions can be used with listed and labelled (metal) frames for positive pressure applications. See Sections 6 - Frames.***
- ***WSCP Cat. A door constructions can be used with WSCP FRX 'A' Series frames for positive pressure applications but with the vertical edge banding reduced from 6.3mm to 3.1mm. See Sections 6 & 7 - WSCP Frames.***
- ***WSCP Cat. B door constructions can be used with WSCP FRX 'B' Series frames for positive pressure applications. See Sections 6 & 7 - WSCP Frames.***
- ***WSCP Cat. B door constructions can be used with WSCP FRX 'A' Series frames for neutral pressure applications. See Sections 6 & 7 - WSCP Frames.***

Design variants to provide for wire ways (*raceways*) and decorative features e.g. Glazing, Planted mouldings, decorative grooving are also permitted.

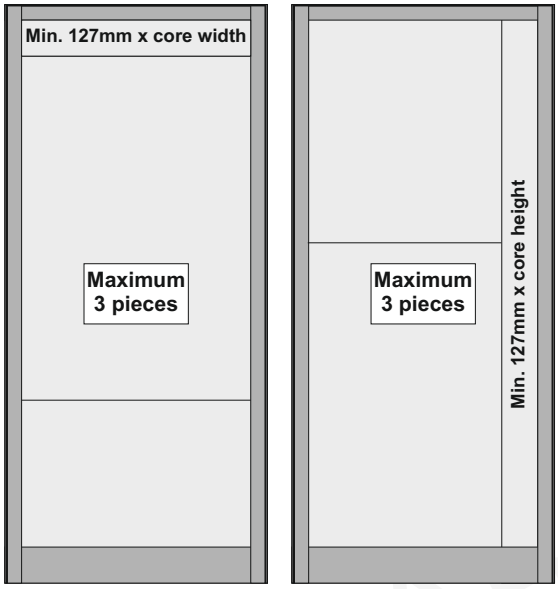
For further guidance refer to:

Section 5 - Approved Variants.
Section 10 - Hardware

WSCP Recommended door construction processes*: To view a video showing WSCP recommended door construction processes click here*

Category 'A' & 'B' - Thermal-Lite: (45~90 minute Fire Door Construction) Core Assembly:

Fig. 4.1



Core Assembly:

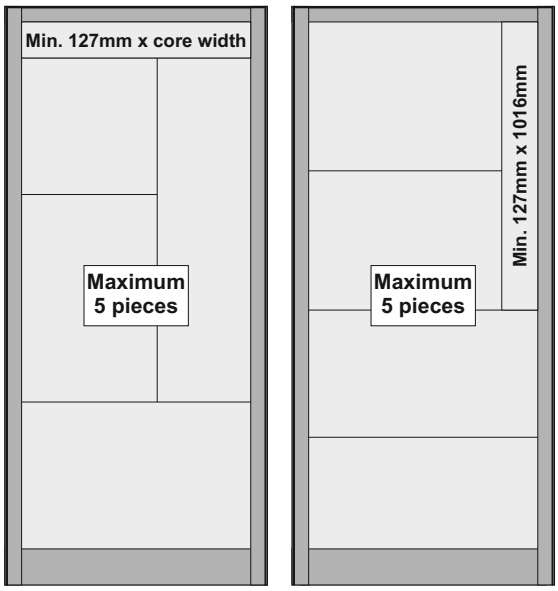
Thermal-Lite:
For door constructions using Thermal-Lite cores, the core can be made using a maximum of 3 pieces.

The pieces must not be less than 127mm x the full core width OR, 127mm x the full core height.

All pieces must be bonded on all edges to other core and stile and rail components using approved adhesives.

Category 'A' & 'B' - WSCP-412: (45~90 minute Fire Door Construction) Core Assembly:

Fig. 4.2



Core Assembly:

WSCP-412:

For door constructions using WSCP-412 cores, the core can be made up using a maximum of 5 pieces.

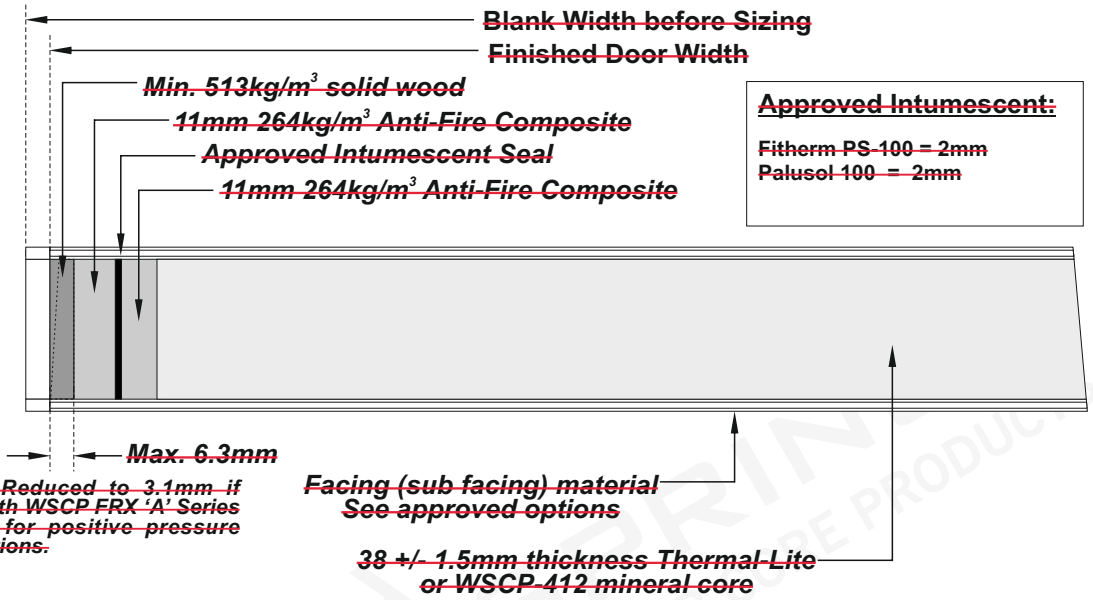
The pieces must not be less than 127mm x the full core width OR, 127mm x 1016mm in height.

All pieces must be bonded on all edges to other core and stile and rail components using approved adhesives.

Door Leaf Constructions
Thermal-Lite & WSCP-412

Category 'A' - Anti-Fire Composite Stiles
Hanging & Closing Stiles - Section through Width.

Fig. 4.3

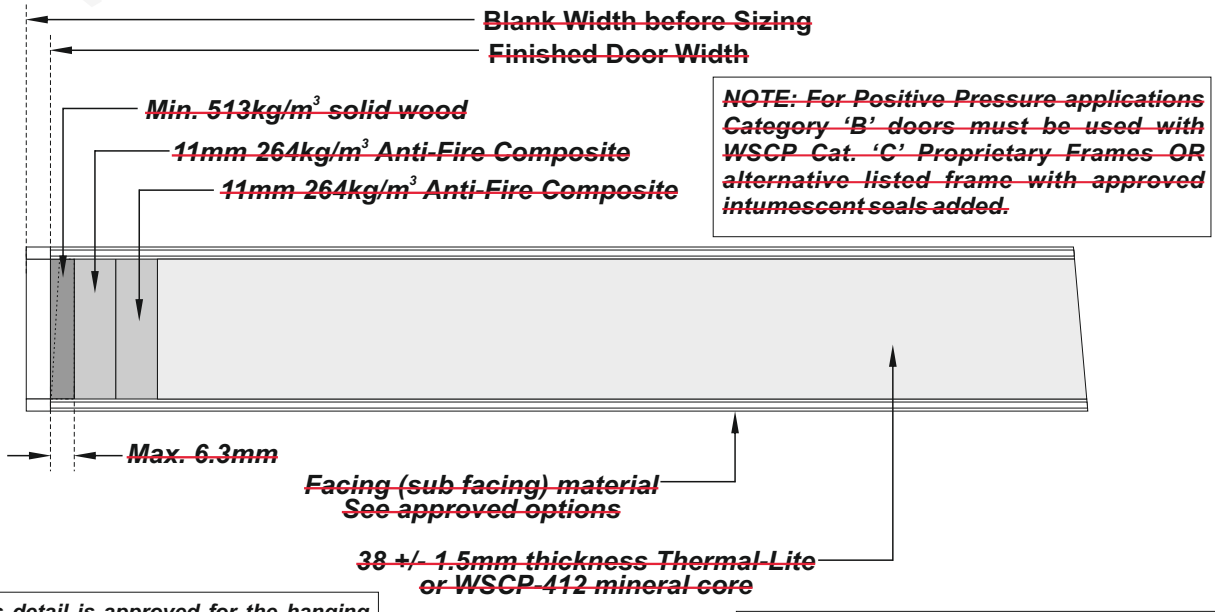


This detail is approved for the hanging and closing stiles for single leaf door assemblies only (not pairs).

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' - Anti-Fire Composite Stiles
Hanging & Closing Stiles - Section through Width.

Fig. 4.4

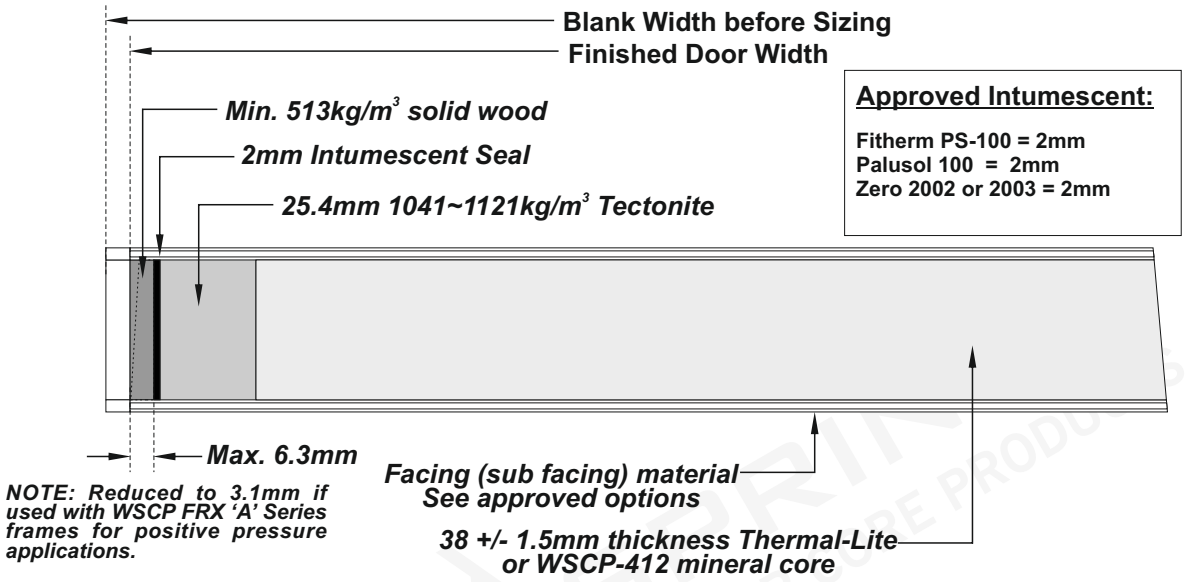


This detail is approved for the hanging and closing stiles for single leaf door assemblies only (not pairs).

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'A' Thermal-Lite or WSCP-412 Core - 25.4mm Tectonite Stiles Hanging & Closing Stiles - Section through Width.

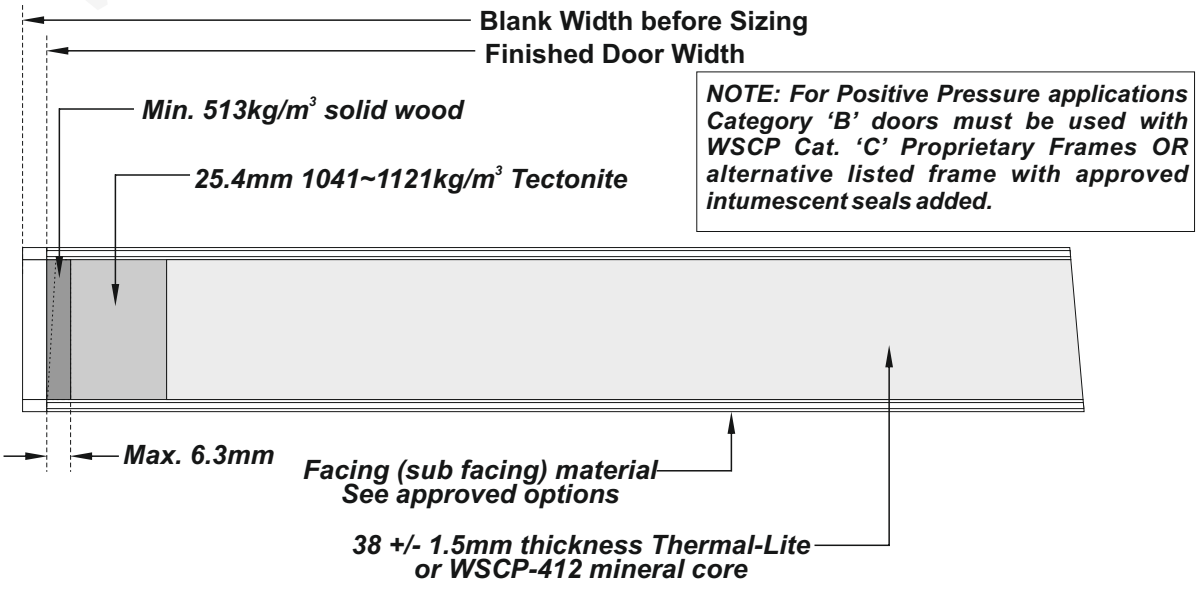
Fig. 4.5



See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' Thermal-Lite or WSCP-412 Core - 25.4mm Tectonite Stiles Hanging & Closing Stiles - Section through Width.

Fig. 4.6

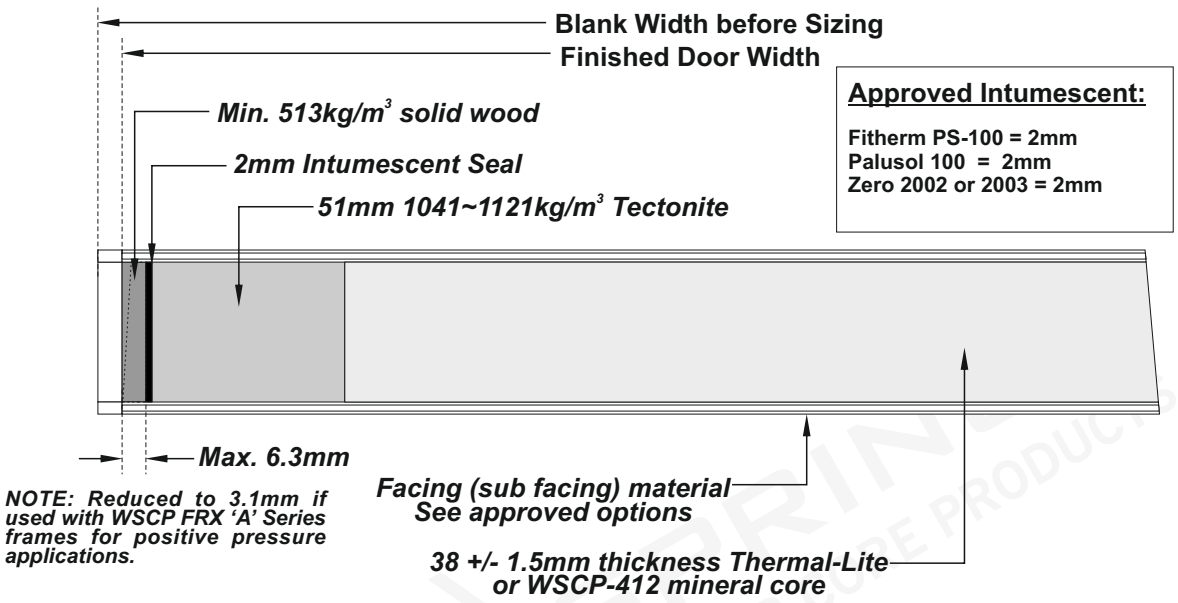


See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Door Leaf Constructions
Thermal-Lite & WSCP-412

Category 'A' Thermal-Lite or WSCP-412 Core - 51mm Tectonite Stiles Hanging & Closing Stiles - Section through Width.

Fig. 4.7



Approved Intumescent:

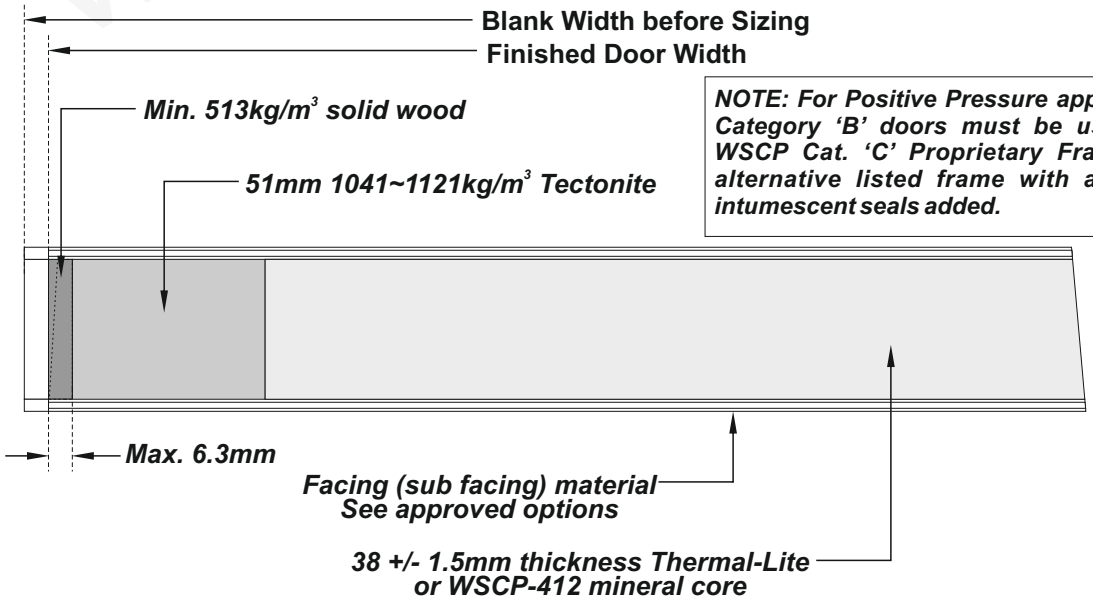
Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

NOTE: Reduced to 3.1mm if used with WSCP FRX 'A' Series frames for positive pressure applications.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' Thermal-Lite or WSCP-412 Core - 51mm Tectonite Stiles Hanging & Closing Stiles - Section through Width.

Fig. 4.8

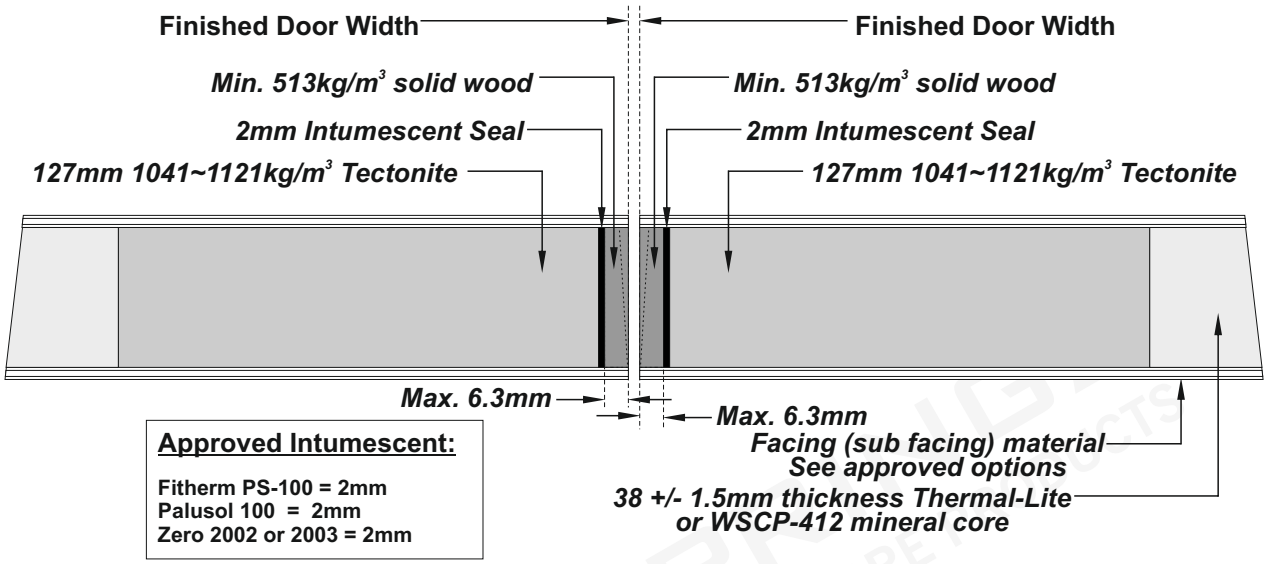


NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals added.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'A' - Thermal-Lite or WSCP-412 Core - 127mm Tectonite Stiles Meeting Stiles - Section through Width. 3 Point Latching - Pairs

Fig. 4.9



Approved Intumescent:

Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

NOTES:

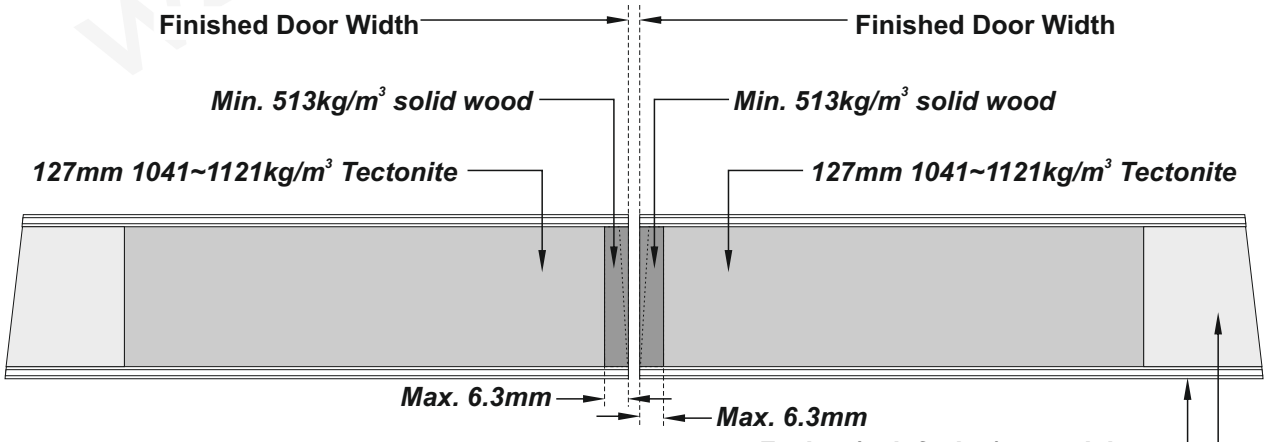
1/ The 127mm Tectonite framing at the meeting stiles must be in a single piece.

2/ This detail is generally suitable to receive surface mounted multi point securing devices - subject to hardware dimensions and location requirements. See hardware listing & installation data.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' - Thermal-Lite or WSCP-412 Core - 127mm Tectonite Stiles Meeting Stiles - Section through Width. 3 Point Latching - Pairs

Fig.4.10



NOTES:

1/ For Positive Pressure applications approved intumescent seals must be added to the meeting stiles of Category 'B' doors and they must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals included in the frame design.

2/ The 127mm Tectonite framing at the meeting stiles must be in a single piece.

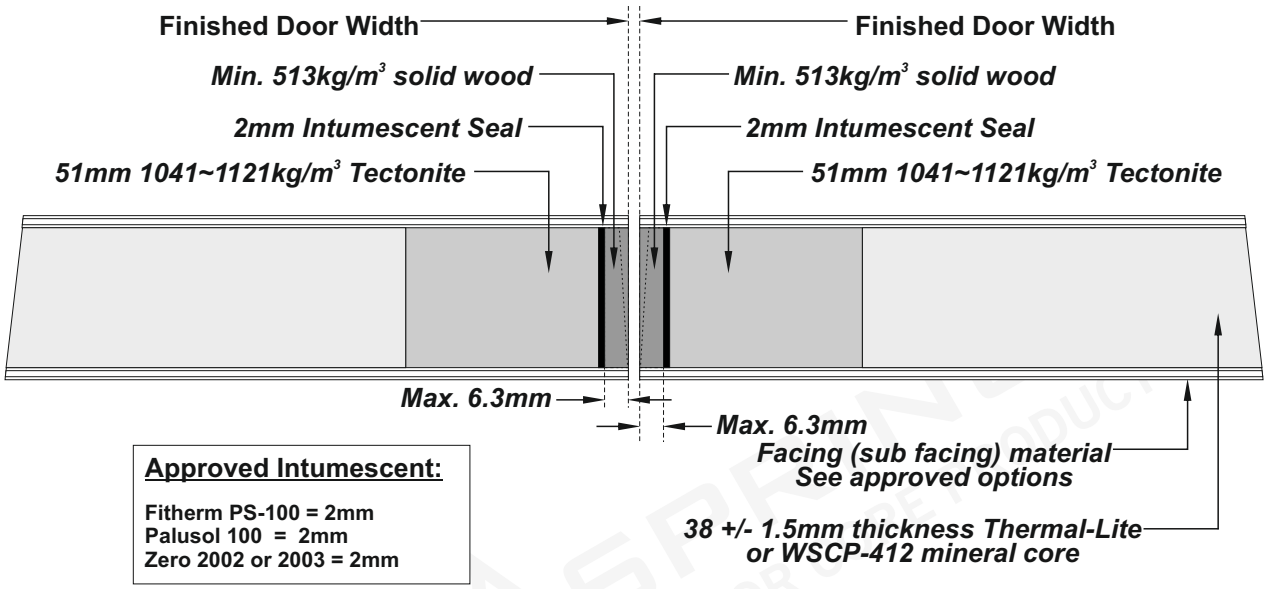
3/ This detail is generally suitable to receive surface mounted multi point securing devices - subject to hardware dimensions and location requirements. See hardware listing & installation data.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Door Leaf Constructions
Thermal-Lite & WSCP-412

Category 'A' - Thermal-Lite or WSCP-412 Core - 51mm Tectonite Stiles Meeting Stiles - Section through Width. 4 Point Latching - Pairs

Fig. 4.11



Approved Intumescent:

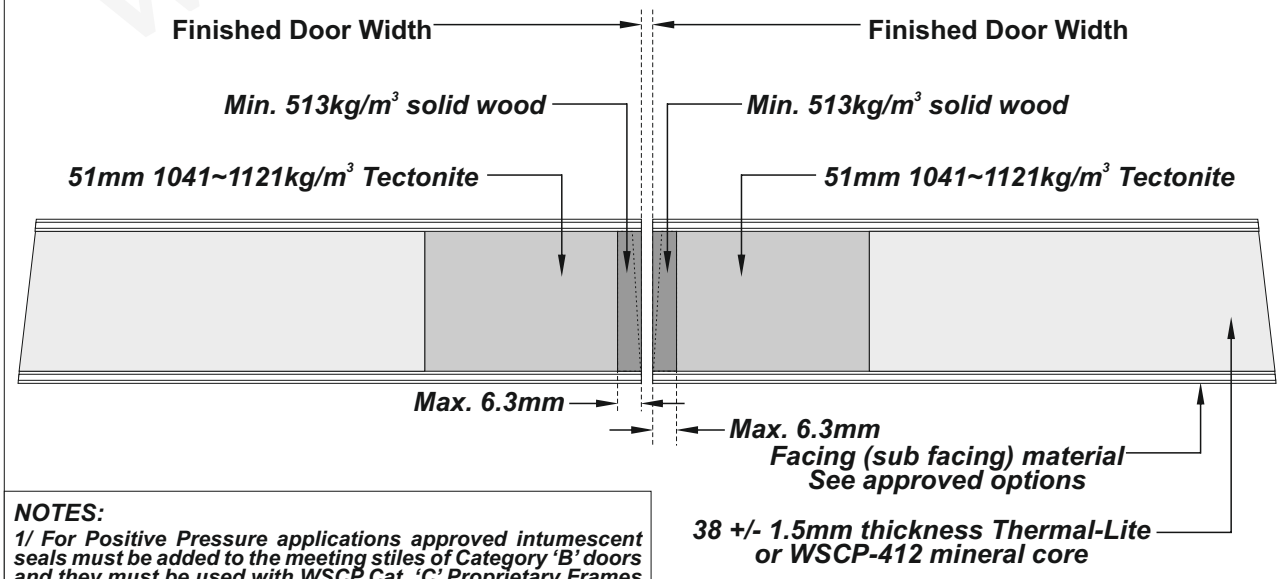
Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

***NOTE:** The 51mm Tectonite framing at the meeting stiles must be in a single piece.*

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' Thermal-Lite or WSCP-412 Core - 51mm Tectonite Stiles Meeting Stiles - Section through Width. 4 Point Latching - Pairs

Fig. 4.12



NOTES:

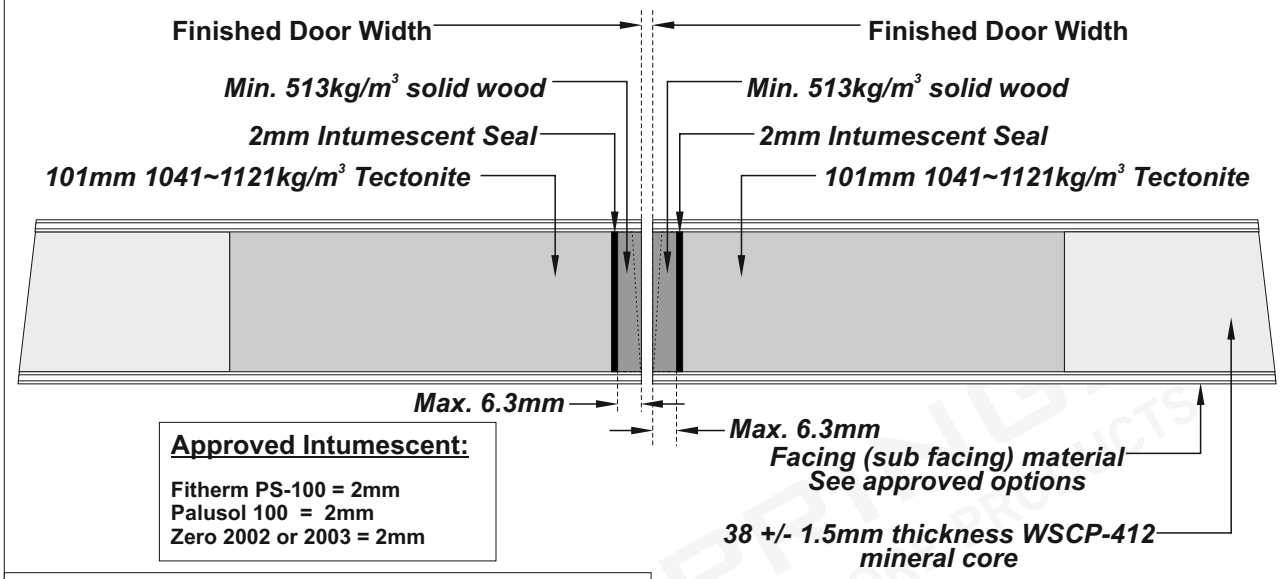
1/ For Positive Pressure applications approved intumescent seals must be added to the meeting stiles of Category 'B' doors and they must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals included in the frame design.

2/ The 51mm Tectonite framing at the meeting stiles must be in a single piece.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'A' - WSCP-412 Core - 101mm Tectonite Stiles
Meeting Stiles - Section through Width. 4 Point Latching - Pairs

Fig. 4.13



Approved Intumescent:

Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

NOTES:

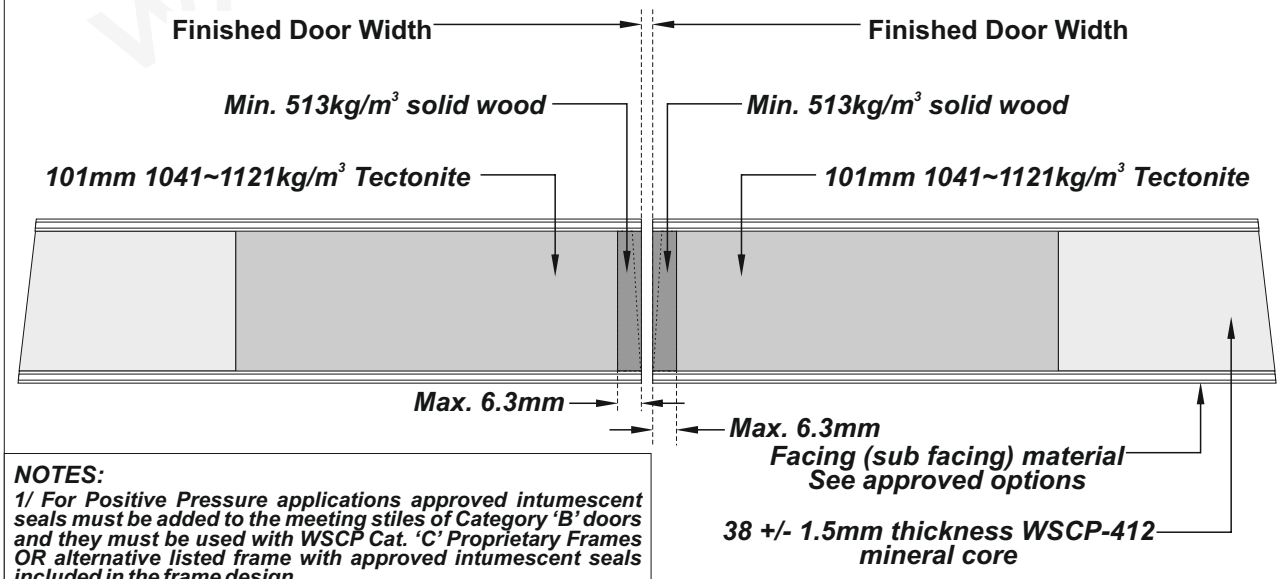
1/ The 101mm Tectonite framing at the meeting stiles must be in a single piece.

2/ This detail may be suitable to receive surface mounted multi point securing devices - subject to hardware dimensions and location requirements. See hardware listing & installation data.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' - WSCP-412 Core - 101mm Tectonite Stiles
Meeting Stiles - Section through Width. 4 Point Latching - Pairs

Fig. 4.14



NOTES:

1/ For Positive Pressure applications approved intumescent seals must be added to the meeting stiles of Category 'B' doors and they must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals included in the frame design.

2/ The 101mm Tectonite framing at the meeting stiles must be in a single piece.

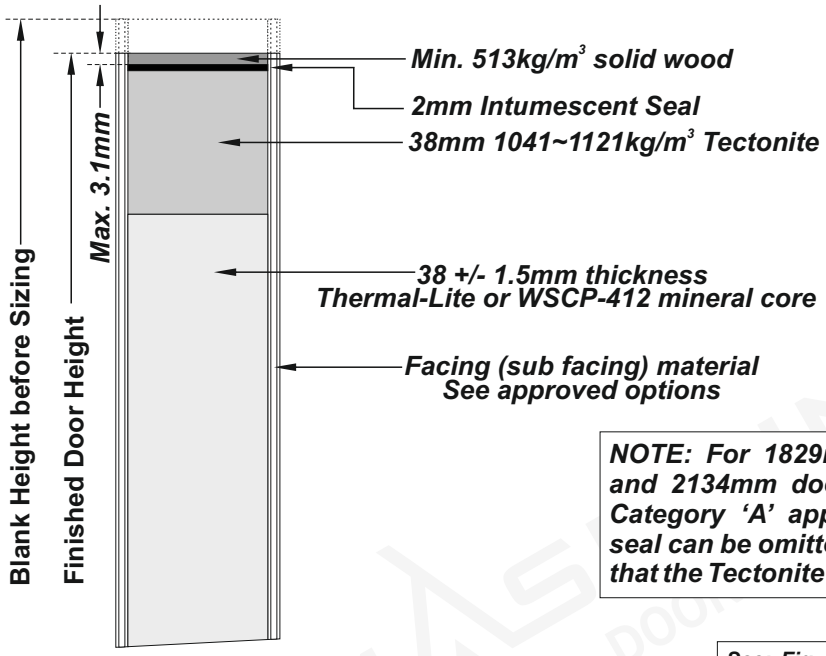
3/ This detail may be suitable to receive surface mounted multi point securing devices - subject to hardware dimensions and location requirements. See hardware listing & installation data.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Door Leaf Constructions
Thermal-Lite & WSCP-412

Category 'A' Thermal-Lite Core or WSCP-412 - 38mm Tectonite Top Rail Section through Height.

Fig. 4.15



Approved Intumescent:

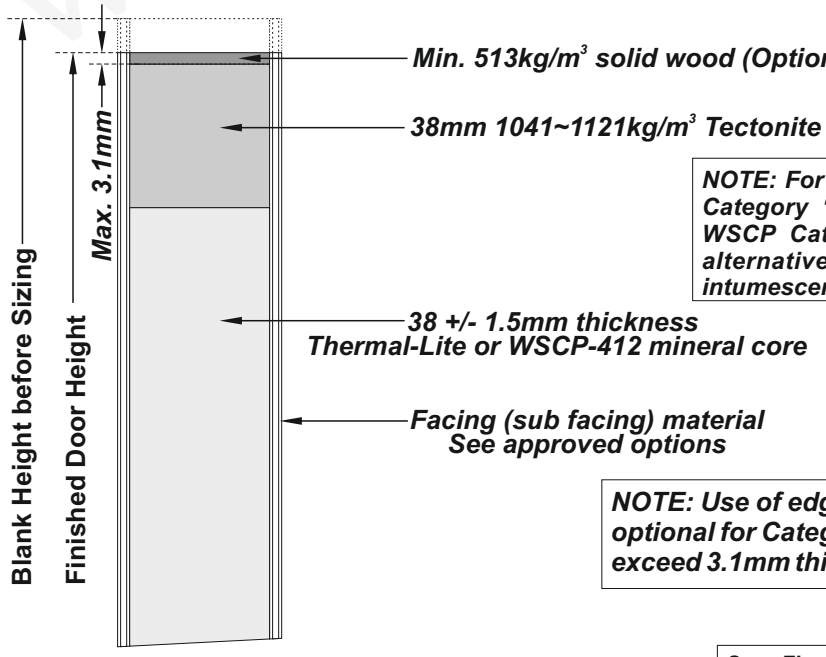
Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

NOTE: For 1829mm maximum door widths and 2134mm door heights for 45 ~ 60min. Category 'A' applications, the intumescent seal can be omitted from the top rail provided that the Tectonite rail is increased to 51mm.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' Thermal-Lite Core or WSCP-412 - 38mmTectonite Top Rail Section through Height.

Fig. 4.16



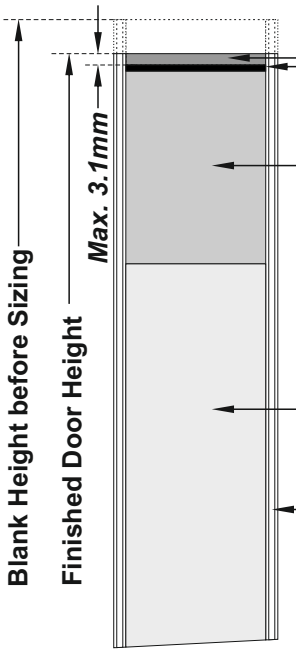
NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals added.

NOTE: Use of edge banding at the top edge is optional for Category 'B' doors but should not exceed 3.1mm thickness if used.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'A' Thermal-Lite or WSCP-412 Core - 51mm Tectonite Top Rail Section through Height.

Fig. 4.17



Min. 513kg/m³ solid wood

2mm Intumescent Seal

51mm 1041~1121kg/m³ Tectonite

Approved Intumescent:

Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

38 +/- 1.5mm thickness
Thermal-Lite or WSCP-412 mineral core

Facing (sub facing) material
See approved options

The use of multi piece rails is approved subject to the following:

1) Overall rail size MUST meet the minimum size requirements for the specific performance. (Refer to Section 3)

2) At least one rail 25.4mm thick must be the full width of the rail and placed on outside edge (opposite the mineral core)

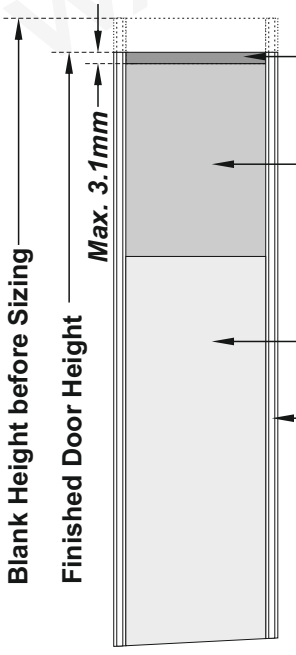
3) Minimum rail component length = 355mm (14 in.)

4) A maximum total length of glue line of 4.5 metres (178 in.) must not be exceeded.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' Thermal-Lite or WSCP-412 Core - 51mm Tectonite Top Rail Section through Height.

Fig. 4.18



Min. 513kg/m³ solid wood

51mm 1041~1121kg/m³ Tectonite

NOTE: Use of edge banding at the top edge is optional for Category 'B' doors but should not exceed 3.1mm thickness if used.

38 +/- 1.5mm thickness
Thermal-Lite or WSCP-412 mineral core

Facing (sub facing) material
See approved options

NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals added.

The use of multi piece rails is approved subject to the following:

1) Overall rail size MUST meet the minimum size requirements for the specific performance. (Refer to Section 3)

2) At least one rail 25.4mm thick must be the full width of the rail and placed on outside edge (opposite the mineral core)

3) Minimum rail component length = 355mm (14 in.)

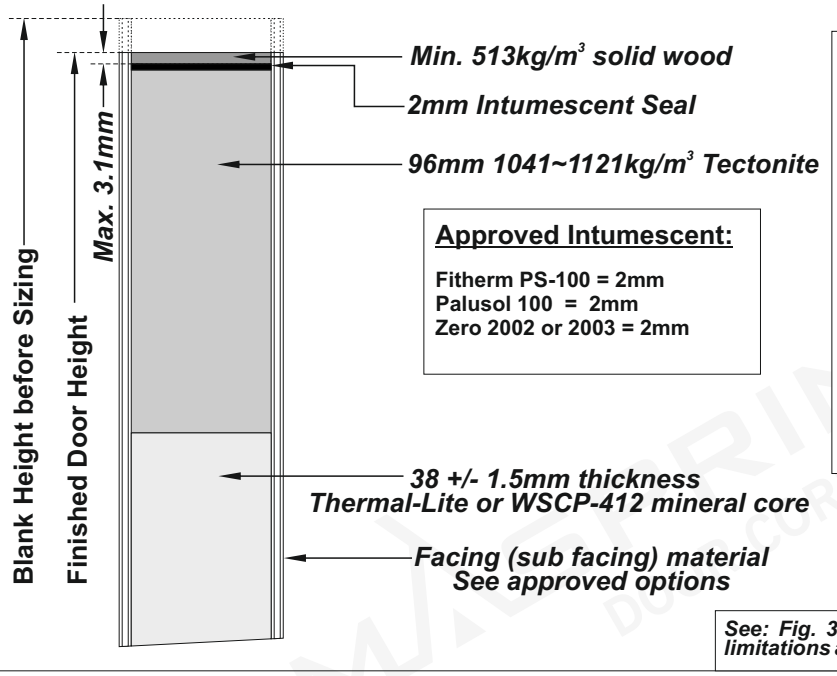
4) A maximum total length of glue line of 4.5 metres (178 in.) must not be exceeded.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Door Leaf Constructions
Thermal-Lite & WSCP-412

Category 'A' Thermal-Lite or WSCP-412 Core - 96mm Tectonite Top Rail Double Leaf (Pairs) with 3 or 4 point CVR hardware Section through Height.

Fig. 4.19



Approved Intumescent:

Fitherm PS-100 = 2mm
Palusol 100 = 2mm
Zero 2002 or 2003 = 2mm

The use of multi piece rails is approved subject to the following:

1) Overall rail size MUST meet the minimum size requirements for the specific performance. (Refer to Section 3)

2) At least one rail 25.4mm thick must be the full width of the rail and placed on outside edge (opposite the mineral core)

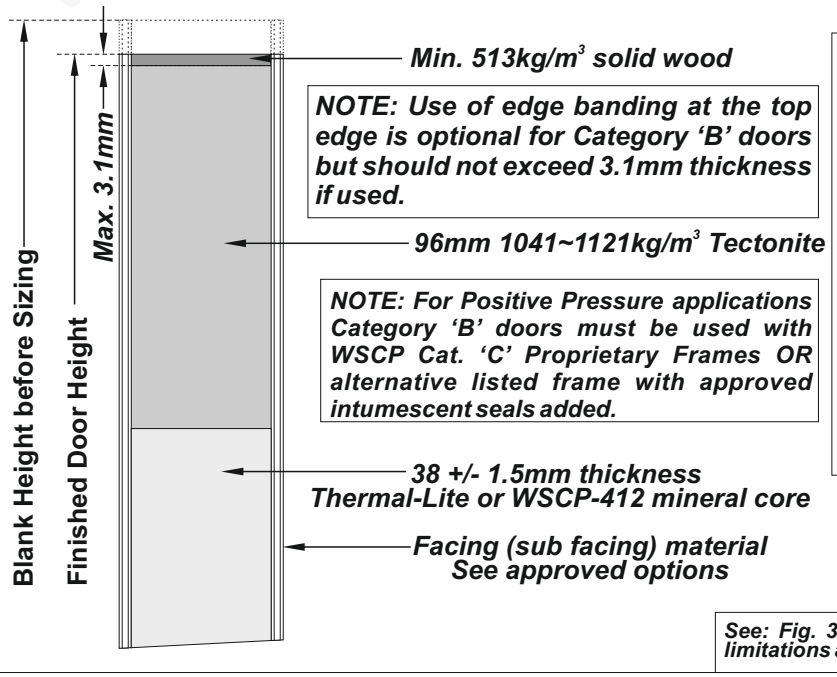
3) Minimum rail component length = 355mm (14 in.)

4) A maximum total length of glue line of 4.5 metres (178 in.) must not be exceeded.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'B' Thermal-Lite or WSCP-412 Core - 96mm Tectonite Top Rail Double Leaf (Pairs) with 3 or 4 point CVR hardware Section through Height.

Fig. 4.20



NOTE: Use of edge banding at the top edge is optional for Category 'B' doors but should not exceed 3.1mm thickness if used.

NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' Proprietary Frames OR alternative listed frame with approved intumescent seals added.

The use of multi piece rails is approved subject to the following:

1) Overall rail size MUST meet the minimum size requirements for the specific performance. (Refer to Section 3)

2) At least one rail 25.4mm thick must be the full width of the rail and placed on outside edge (opposite the mineral core)

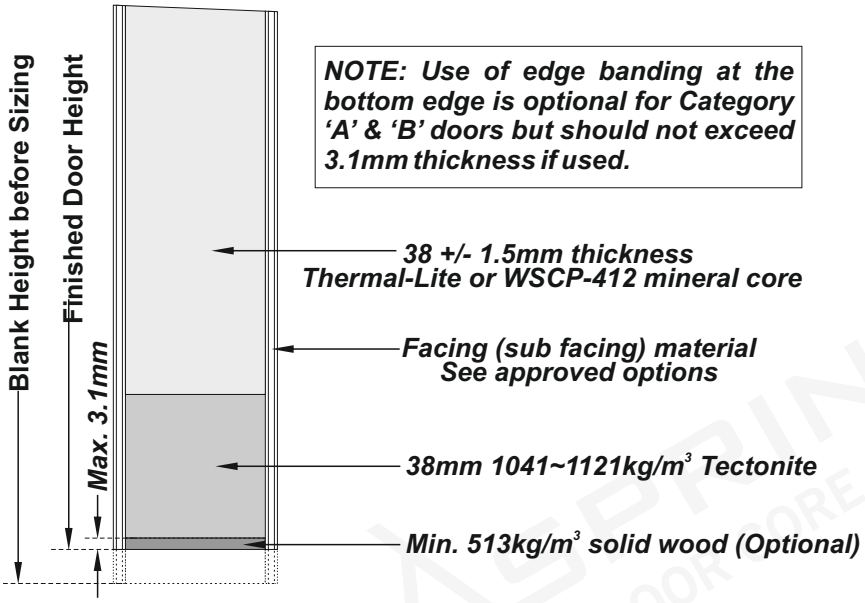
3) Minimum rail component length = 355mm (14 in.)

4) A maximum total length of glue line of 4.5 metres (178 in.) must not be exceeded.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'A' & 'B' Thermal-Lite Core or WSCP-412 - 38mm Tectonite Bottom Rail Section through Height.

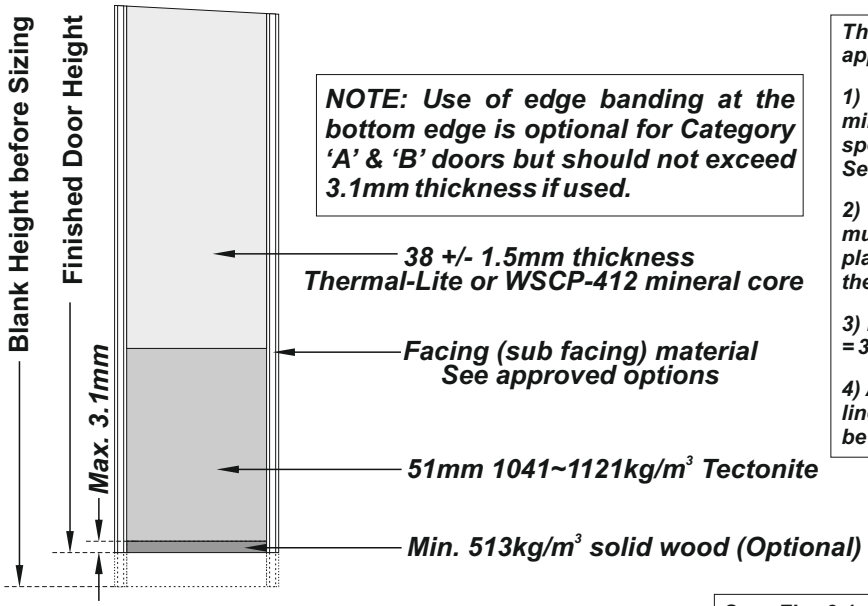
Fig. 4.21



See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Category 'A' & 'B' Thermal-Lite Core or WSCP-412 - 51mm Tectonite Bottom Rail Section through Height.

Fig. 4.22



The use of multi piece rails is approved subject to the following:

1) Overall rail size MUST meet the minimum size requirements for the specific performance. (Refer to Section 3)

2) At least one rail 25.4mm thick must be the full width of the rail and placed on outside edge (opposite the mineral core)

3) Minimum rail component length = 355mm (14 in.)

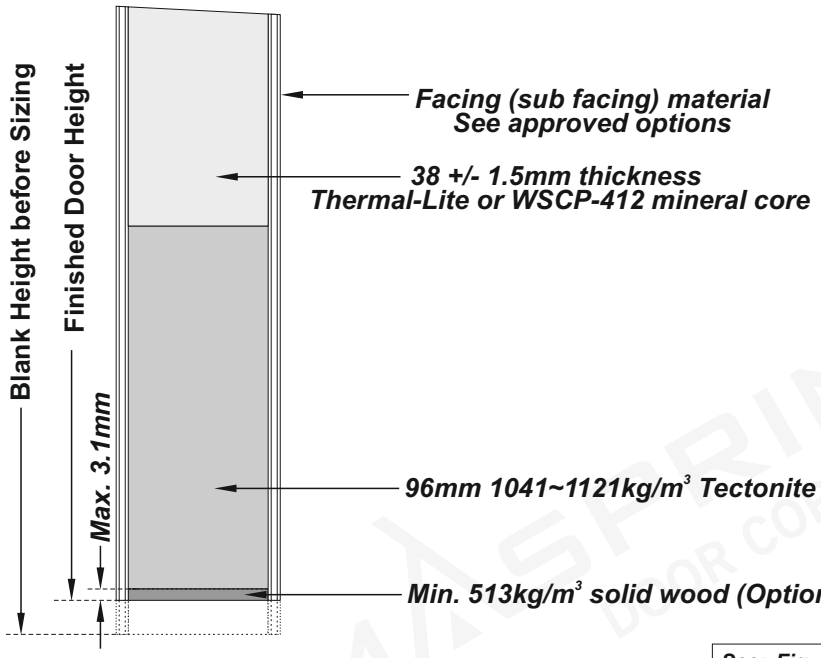
4) A maximum total length of glue line of 4.5 metres (178 in.) must not be exceeded.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Door Leaf Constructions
Thermal-Lite & WSCP-412

Category 'A' & 'B' Thermal-Lite or WSCP-412 Core - 96mm Tectonite Bottom Rail Double Leaf (Pairs) with 3 or 4 point CVR hardware Section through Height.

Fig. 4.23



The use of multi piece rails is approved subject to the following:

1) Overall rail size MUST meet the minimum size requirements for the specific performance. (Refer to Section 3)

2) At least one rail 25.4mm thick must be the full width of the rail and placed on outside edge (opposite the mineral core)

3) Minimum rail component length = 355mm (14 in.)

4) A maximum total length of glue line of 4.5 metres (178 in.) must not be exceeded.

See: Fig. 3.1 ~ 3.10 for approved dimensional limitations according to performance.

Section 5: Constructions Approved Variations

Section 5 describes approved variations to the basic designs described in ***Section 4.***

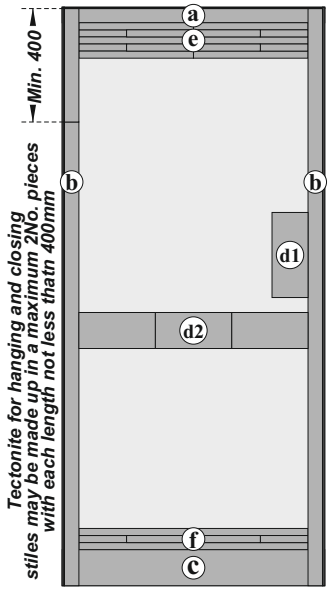
In addition to the range of applications described in Section 4, WSCP can also supply door designs to provide for 2743mm (9ft.) high doors in single leaf configurations up to 1219mm (4ft.) wide and 2438 (8ft.) overall width double leaf door (pairs). These constructions use different core materials and it is necessary to contact Warm Springs Composite Products for further information and guidance.

Permissible variants include:

Door Leaf Constructions Thermal-Lite & WSCP-412 Approved Variants

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) Internal Tectonite Blocking Options

Fig. 5.1



Internal Blocking:

Multiple piece Tectonite blockings can be incorporated into the door construction to accommodate screw fixings for hardware and other items that require secure fixings to the face of the door.

a = Basic structure Tectonite head rail. (***NOTE: Multi piece rails permitted - See Section 4***).

b = Basic structure Tectonite stiles. (***NOTE: Hanging & Closing stiles can be made up of 2 pieces of Tectonite using Min. 25.4mm sections in Min. 400mm lengths bonded together using approved adhesives. Meeting stiles - except WSCP special profile CVR-LBR stiles - must be in one piece***).

c = 127mm increased bottom rail height. (***NOTE: Multi piece rails permitted - See Section 4***).

d1 = Optional hardware blocking Min, 127mm wide height and location to suit intended hardware fittings. (*Alternative to **d2***).

d2 = Optional mid rail Max. 127mm high in up to 3 pieces. (*Alternative to **d1***).

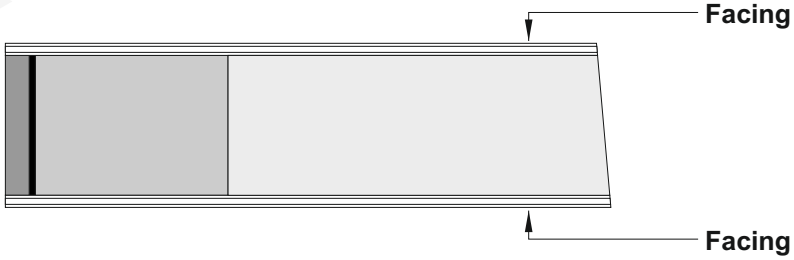
e = Optional additional head rails - up to 5No. Min. 25.4mm pieces.

f = Optional additional bottom rails - 1No. 50mm rail *OR* 3No. 25.4mm rails. (***NOTE: Multi piece rails permitted - See Section 4***)

NOTE: All stiles, rails and blockings must be bonded on all sides and edges to the core and other rails using approved adhesives. (See approved adhesives listing)

Category 'A' & 'B'- Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Door Facings.

Fig. 5.2



Door Facings:

Doors may be faced with:

Plywood: Nom. 3mm thickness 3 or 4mm plywood complying with NWWDA 1.S.1 Type 1 or Type 11 requirements. (*Illustrated*).

Veneer: Nom. 1.6mm ~ 2.5mm natural or composite cross-banding with Nom. 0.6 ~ 1mm thick solid wood face veneer OR Nom. 0.8mm Birch veneer back laminated to Nom. 2.5mm core plywood (*minimum density 430kg/m^3*). - Nom. 3mm o/a thickness.

Hardboard: Nom. 3.2mm thick with a minimum density of 720kg/m^3 complying with ANSI/AHA 135.4 requirements.

High Pressure Laminate (*HPL*): Max. 1.27mm thick HPL laminated to a 1.6mm ~ 2.5mm thick natural or composite cross-banding.

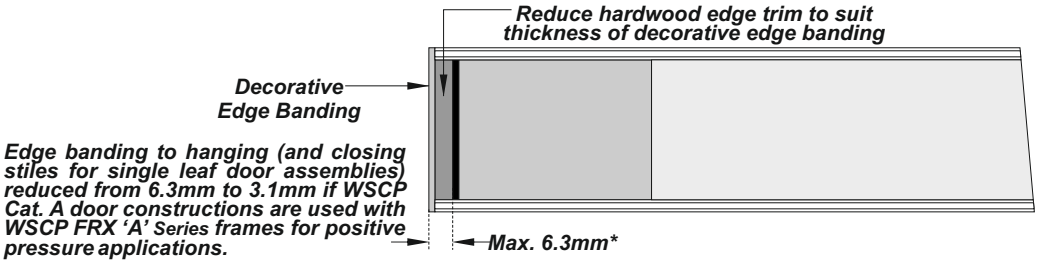
NOTE: Thin plastic (0.9 ~ 1.1mm thick) may be used as an overlay on doors having a Nom. 3.2mm thickness hardboard, wood face veneer or plywood facings.

WARM SPRINGS
DOOR CORE PRODUCTS

Door Leaf Constructions
Thermal-Lite & WSCP-412
Approved Variants

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 :
(45~90 minute Fire Door Construction) - Decorative Edge Banding

Fig. 5.3



Decorative Edge Banding:
Decorative Edge Banding refers to a material up to 1.6mm thick, serving primarily as a decorative edge facing that is applied over the base and completed stiles and / or rails; it is considered to be part of the door construction. ***NOTE: See separate information for 'Edge Guards'.***

Approved materials for edge banding applications:

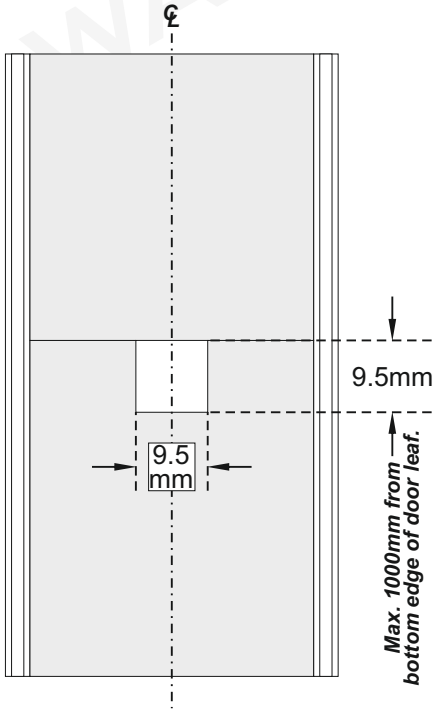
Plastic: 0.8 ~ 1.6mm thickness Plastic laminate complying with NEMA 1-LD-3 requirements.

Veneer: Any species of wood veneer not exceeding 1.6mm thickness and with a density not less than 360kg/m^3.

Medium Density Overlay (*MDO*): Any Medium Density Overlay not exceeding 1.6mm thickness.

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 :
(45~90 minute Fire Door Construction) - Electric Wire Ways (*Raceways*):

Fig. 5.4



Electric Raceways:

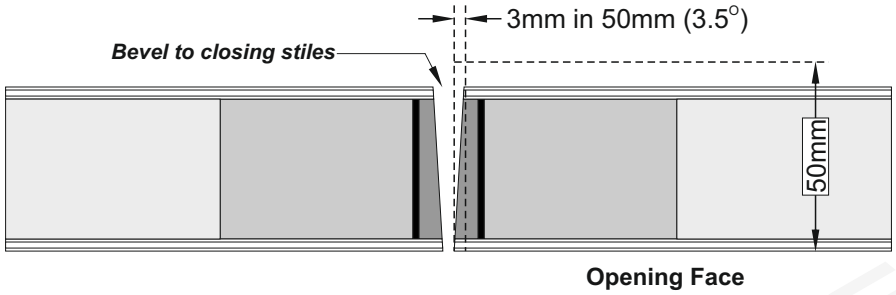
Wire ways (*Raceways*) can be formed in the door to form a conduit to connect wiring for the connection of hanging stile fitted electrical transfer hinge or other approved Electrical Power Transfer (*EPT*) device to an approved electrically activated securing device at the closing stile.

To provide for this facility a maximum 9.5x9.5mm groove centred within the thickness of the door is formed in the core prior to the assembly of the door by use of a minimum 2 pieces of jointed core material and before the application of the door skins.

A 6mm dia. hole can be drilled through the edges of the stiles of the completed door to align with the wire way (*raceway*).

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Door Edge Bevelling

Fig. 5.5



A *'leading edge'* or bevel can be applied to the closing stiles of single leaf doors and / or each leaf of a pair to ensure that the door will clear the frame or the adjacent door leaf during its swing.

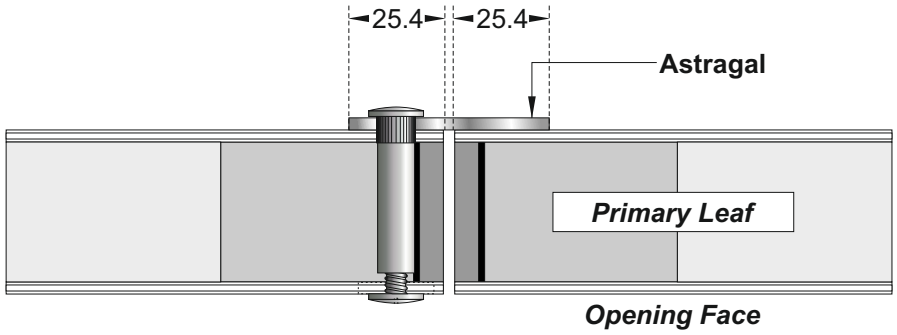
A standard bevel of 3mm in 50mm (*1/8in. in 2in.*).

NOTE 1: For single leaf door assemblies the door edge bevel can be increased to 6mm in 50mm (1/4in in 2in.).

NOTE 2: For further guidance for a need to apply a leading edge (edge bevel) together with a method for calculating bevel requirements See Appendix 1 'Door Growth'.

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Astragals

Fig. 5.6



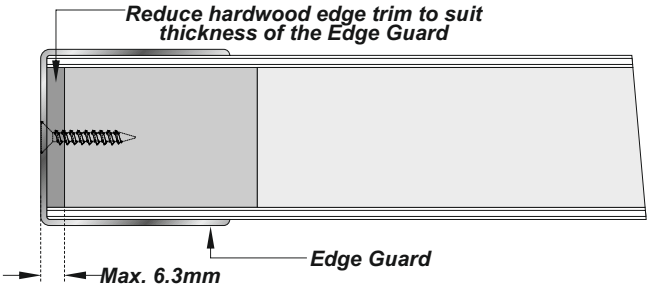
Astragals - Approved specification:
Min. 18USG (*1.27mm*) metal edges or astragals shall be used. (*Per NFPA 80*).
Metal edges or astragals shall overlap the face of the door a min. 25.4mm. Attachments shall be with #8 x Min. 19mm. threaded wood screws located at Max. 51mm. from (*each*) end and at not less than 305mm centres.

Or by use of bolt through fixings as illustrated.

Door Leaf Constructions
Thermal-Lite & WSCP-412
Approved Variants

Category 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Neutral Pressure applications *ONLY* - Edge Guards.

Fig. 5.7

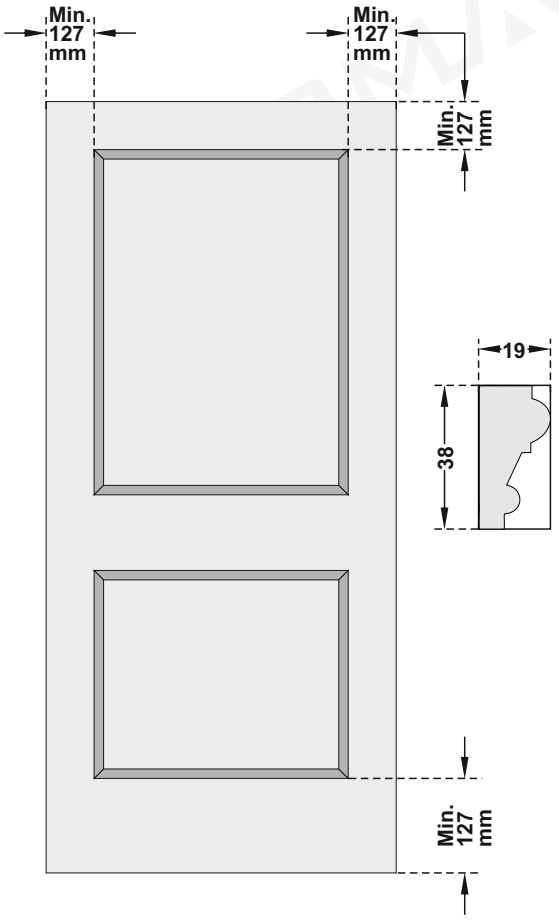


Surface mounted Edge Guards may be used for neutral pressure applications ONLY.

Approved materials include steel, stainless steel and Acrovyn.

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) Applied Decorative Mouldings

Fig. 5.8



Applied Mouldings:

Wood mouldings can be applied to one or both faces of the door.

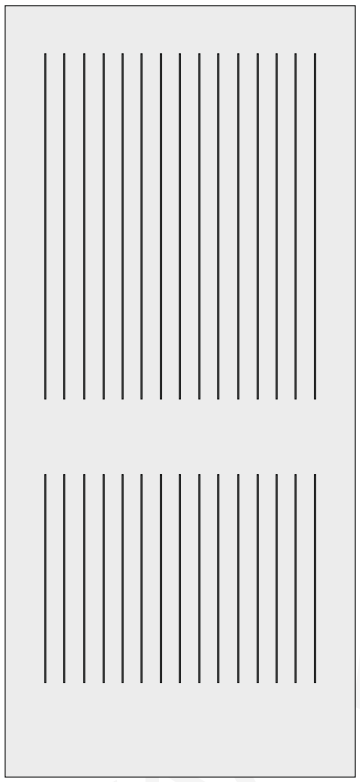
The mouldings must be in wood and may be to any profile provided that the overall dimension of the moulding does not exceed 38x19mm.

The total area of the mouldings must not exceed 20% of the door face area and must be located at least 127mm from any edge of the door leaf.

Mouldings must not be located to overlap any hardware cut outs and may be attached to the door using mechanical fasteners, adhesives or a combination of both.

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45 minute Fire Door Construction) - Decorative Grooves

Fig. 5.9



Decorative Grooves:

The use of 'V' shaped decorative grooves is approved as a decorative detail for use with Category 'A' & 'B' doors limited to performances up to 45 minutes.

Decorative grooves may be applied to one or both faces of the door.

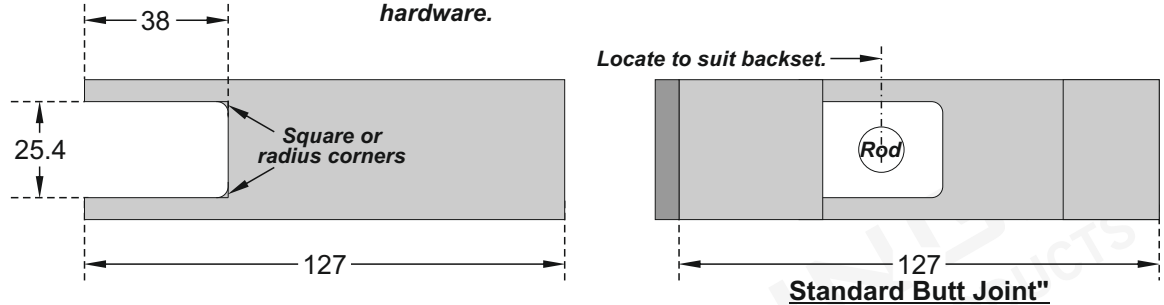
Grooves must not be more than 3mm wide and limited to 1.5mm deep from the facings of the door.

Door Leaf Constructions
Thermal-Lite & WSCP-412
Approved Variants

Category 'A' - Thermal-Lite *OR* WSCP-412 : (45~60 min.) - Single Leaf & Double Leaf (*Pairs*)
Category 'B' - (45~60 min.) Single Leaf & Double Leaf (*Pairs*)
Concealed Vertical Rod (*CVR*) & Concealed Vertical Rod - Less Bottom Rod (*CVR* - LBR) securing devices.

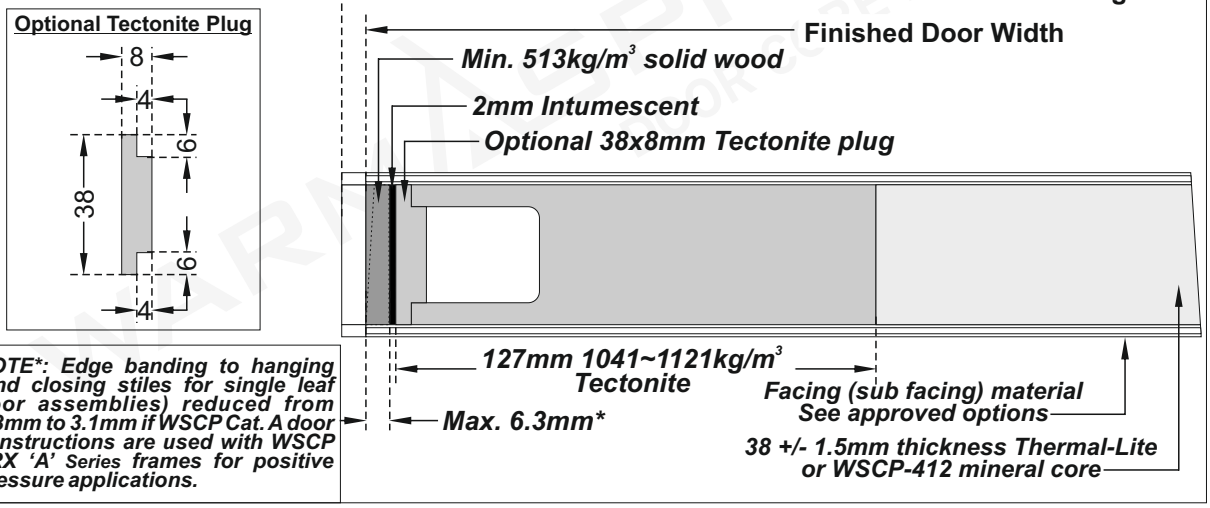
Fig. 5.10

WSCP Profiled Tectonite Stile: ***This Tectonite stile can be made up using up to 3 pieces to accommodate the necessary backspacing to suit the particular CVR or CVR-LBR hardware.***



Standard Butt Joint"

Closing or Meeting Stile



NOTE*: Edge banding to hanging (and closing stiles for single leaf door assemblies) reduced from 6.3mm to 3.1mm if WSCP Cat. A door constructions are used with WSCP FRX 'A' Series frames for positive pressure applications.

Concealed Vertical Rod (*CVR*) & Concealed Vertical Rod - Less Bottom Rod (CVR-LBR) securing devices.

Concealed vertical Rod (*CVR*) & Concealed vertical Rod - Less Bottom Rod (*CVR* - LBR) securing devices listed as approved for the required fire rating with mineral core door constructions can be used with Thermal-Lite and WSCP-412 core doors.

All stiles installed with CVR & CVR-LBR hardware must be a minimum 127mm wide and constructed using profiled Warm Springs Tectonite.

For pairs of doors using CVR securing devices the top and bottom rails must be of a minimum 95mm ($3^3/_4$in.) height.

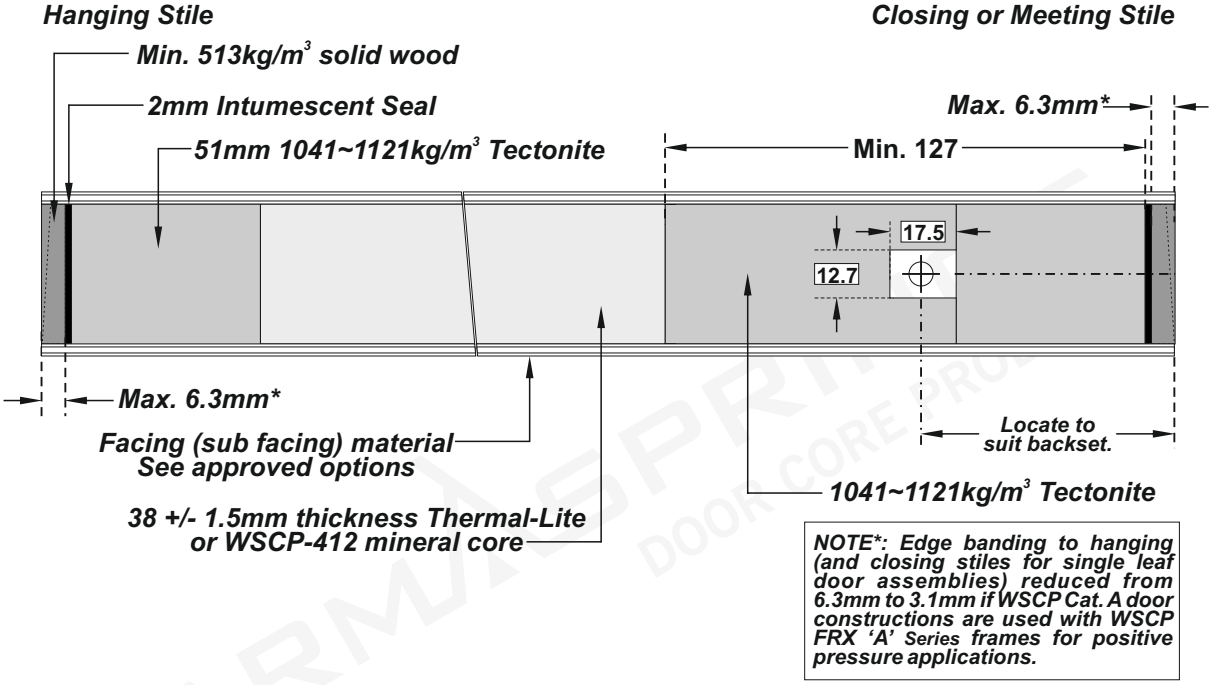
The above detail illustrates stile requirements for Category 'A' Positive Pressure applications for single leaf door assemblies and at the meeting stiles of double leaf door assemblies (*pairs*).

NOTE 1: The intumescent seal can be omitted for Cat. B neutral pressure applications.

NOTE 2: Listed intumescent seals must be added to the meeting stiles of Cat. B door constructions when used for Positive Pressure applications.

Category 'A' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Single Leaf
Category 'A' - (45~90 minute Fire Door Construction) Double Leaf (*Pairs*)
Adams Rite Concealed Vertical Rod (*CVR*) & Concealed Vertical Rod - Less Bottom Rod (*CVR* - LBR) securing devices.

Fig. 5.11



NOTE: Edge banding to hanging (and closing stiles for single leaf door assemblies) reduced from 6.3mm to 3.1mm if WSCP Cat. A door constructions are used with WSCP FRX 'A' Series frames for positive pressure applications.*

Adams Rite 3900/8900 Concealed Vertical Rod Exit Device:

Concealed vertical Rod (*CVR*) securing devices listed as approved for the required fire rating with mineral core door constructions can be used with Thermal-Lite up to 60min. and WSCP-412 core doors up to 90min.

All stiles installed with CVR hardware must be a minimum 127mm wide and constructed using profiled Warm Springs Tectonite.

The top and bottom rails must be of a minimum 96mm ($3^3/_4$in.) height.

The above detail illustrates stile requirements for Category 'A' Positive Pressure applications for single leaf door assemblies and at the meeting stiles of double leaf door assemblies (*pairs*).

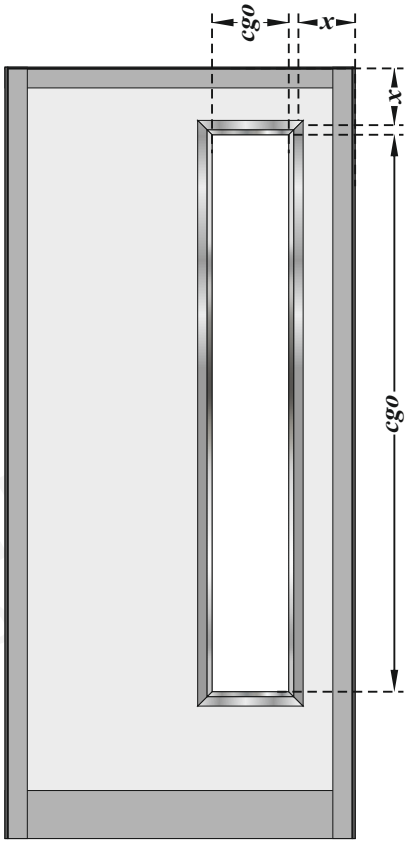
The same detail applies to the meeting stiles for Category 'B' constructions used for Positive Pressure applications.

NOTE: Positive pressure fire performances up to 90mins. can be achieved using the Adams Rite 3900/8900 Concealed Rod Exit Device - See Section 10 pages 10.9 & 10.10 for further guidance.

Door Leaf Constructions
Thermal-Lite & WSCP-412
Approved Variants

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Vision Panels:

Fig. 5.12



Thermal-Lite and WSCP-412 door core constructions can be glazed subject to the following glazing 'rules':

1/ Thermal-Lite core doors - 45 ~ 60min. fire door applications:
Use listed and labelled positive pressure steel glazing kit for use in mineral core doors with a maximum clear glass area of 0.46m^2.

2/ WSCP-412 core doors - 45 ~ 60min. fire door applications:
Use listed and labelled positive pressure steel glazing kit for use in mineral core doors with a maximum clear glass area of 0.46m^2 for a single glazed aperture, with a maximum clear glass area of 0.8m^2 where multiple apertures are used.

3/ Thermal-Lite and WSCP-412 core doors for 90min. fire door applications:
Use listed vision frames and listed glazing or listed and labelled glazing kits for use in mineral core doors with a maximum clear glass area of 0.065m^2.

NOTE 1: The maximum approved clear glass area for the door construction must not be exceeded.

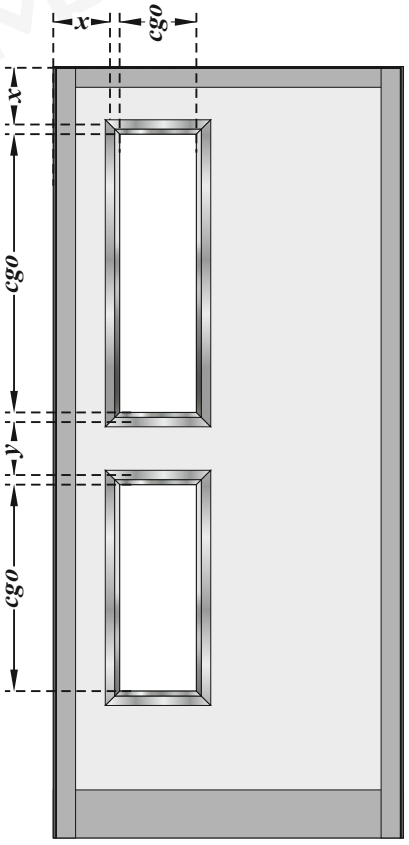
NOTE 2: The maximum height and width areas are a function of the listing limitations of the vision glazing kit this may require a reduction in dimensions that are otherwise approved for the door construction.

Multiple Apertures:

Multiple apertures are permitted provided that the sum total of the clear glass areas do not exceed the maximum recorded above for the particular door construction and performance.

For fire performances up to 60mins. the minimum dimension between aperture cut outs (*before glazing*) ***(dim. y)*** must not be less than 50mm.

For 90min. fire door applications the minimum dimension between aperture cut outs (*before glazing*) ***(dim. y)*** must not be less than 140mm.



NOTES:

cgo = Clear glass opening.

'x' = Minimum margin from the edge of the door to the nearest sight line of the aperture cut in the door to receive the glazed panels.

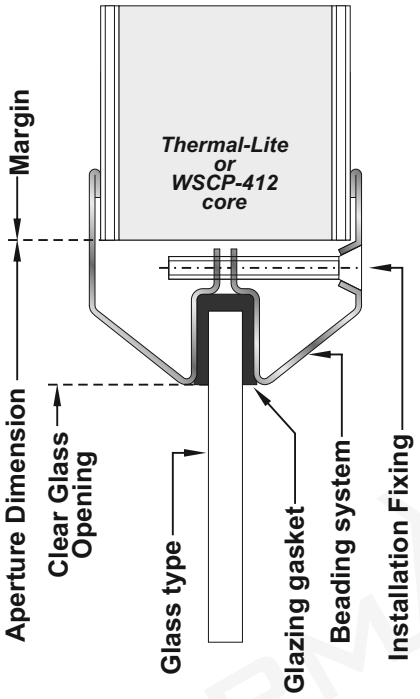
NOTE 1: The minimum margin for fire doors up to 60min. is 50mm.

NOTE 2: For 90min. fire doors the minimum margin is increased to 140mm.

NOTE 3: The margins must be further increased to provide for the same minimum margin dimensions described above from any mortise pocket, machining for hardware or electrical wire ways (raceways).

Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Vision Panels:

Fig. 5.13



Glazing:

This detail illustrates a typical detail for glazing systems suitable for use with Thermal-Lite and WSCP-314 core door constructions. ***NOTE: Details may vary according to source.***

Glass and glazing systems must be Listed as suitable for use with mineral core door constructions.

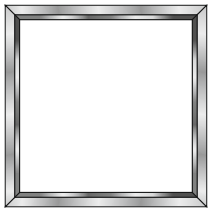
The glazing system should provide for the following:
1/ Beading system.
2/ Glazing gasket (*if applicable*).
3/ Installation fixings.
4/ Glass type complying with listed requirements for the particular performance.

NOTE: It is necessary to carefully cut apertures in the door to receive the particular glazing system in accordance with the 'rules' applicable to the particular door construction and performance requirement described by reference to Page 5.9 with further reference glazing system suppliers' installation instructions.

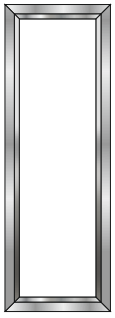
Category 'A' & 'B' - Thermal-Lite *OR* WSCP-412 : (45~90 minute Fire Door Construction) - Vision Panel shapes:

Fig. 5.14

Aperture Shape:
There are no restrictions with regard to the shape of the aperture subject to any restrictions that may apply to the glazing system.



Square



Rectangular

Circular

Section 6: Door Frames

Section 6 describes approved frame designs for use with WSCP Thermal-Lite and WSCP-412 based door constructions.

Warm Springs Composite Products provide for two basic frame designs that have been tested for use with WSCP door constructions.

Listed frames providing for the required performances may be obtained from alternative sources where these are approved for use with mineral core door constructions.

Option 1: Category 'C' Standard Steel Frame Designs:

Steel or hollow metal frame designs can be used with Category 'A' door constructions to provide for Positive Pressure Door Assembly applications.

Steel or hollow metal frame designs can also be used with Category 'B' door constructions for Neutral Pressure applications.

For Positive Pressure applications, additional Category 'G' edge sealing is required when using Steel or hollow metal frame designs with Category 'B' door designs.

NOTE: For double leaf (pairs) of Category 'B' door leaves used with Steel or hollow metal frames for Positive Pressure applications, additional approved Category 'G' intumescent sealing is required at the meeting stiles of the door leaves. Alternatively meeting stiles can be provided by Warm Springs with concealed intumescent seals under hardwood lippings.

Option 2: Category 'C' - WSCP FRX Proprietary Frame Designs:

WSCP FRX ***'A' Series*** frames can be used to provide for Positive Pressure applications when used with WSCP Category 'A' door constructions provided that the edge banding is reduced from 6.3mm to max. 3.1mm to the hanging stiles (*and closing stiles of single leaf door assemblies*).

WSCP FRX ***'A' Series*** frames can be used to provide for Neutral Pressure applications when used with WSCP Category 'B' door constructions.

WSCP FRX ***'B' Series*** frames can be used to provide for Positive Pressure applications when used with WSCP Category 'B' door constructions.

NOTE 1: The intumescent seal shown recessed into the back of the frame may be surface applied. This intumescent seal is to be secured using preferred adhesives and / or nailed or stapled to the frame Jambs (legs) and Head.

NOTE 2: For double leaf (pairs) of Category 'B' door leaves used with WSCP FRX Proprietary frames for Positive Pressure applications, additional approved Category 'G' intumescent sealing is required at the meeting stiles of the door leaves. Alternatively meeting stiles can be provided by Warm Springs with concealed intumescent seals under hardwood lippings.

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5 August 2011

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Fax: 541-553-1145
Email: jcoochise@wscp.com

Subject: Use of doors manufactured and supplied by Warm Springs in steel frames.

Dear Mr. Coochise:

This letter is in response to your request for documentation that shows that Warm Springs Composite Products fire doors are certified for use in steel frames. As you noted in your request your doors are listed for use in Category C frames. In addition you noticed that this refers to "Standard" frames, as listed in the Manufacturing specs refer to Listed Steel frames and "Proprietary" frames which are also listed, refers to frames such as WSCP FRX Rated Frame System. Your doors have been tested in both "Standard" frames and in "Proprietary" frames.

The "Standard" frames refer to hollow metal frames constructed with 16 gauge steel (1.3 mm). The steel is either roll formed or bent in break presses to form the shape of the frames. Then the frame legs and headers are either welded together or Put together per their installation requirements. These steel frame designs are the basis of UL Subject 63 and are used as the basis of all commercial steel frames. Hence these are considered "Standard" frames. Normally when we test fire rated doors we install them in these "Standard" frames which are available from any steel frame manufacturer.

Therefore your doors are eligible to be installed in any and all listed and labeled steel frames. We do not limit you as to the manufacturer of these frames. The doors are to be installed in the steel frames per your installation instructions and the hardware is limit to what is allowed in the listing and labeling procedures you have with Intertek based on all of your testing.

Please feel free to contact Intertek if you have any other questions or comments.

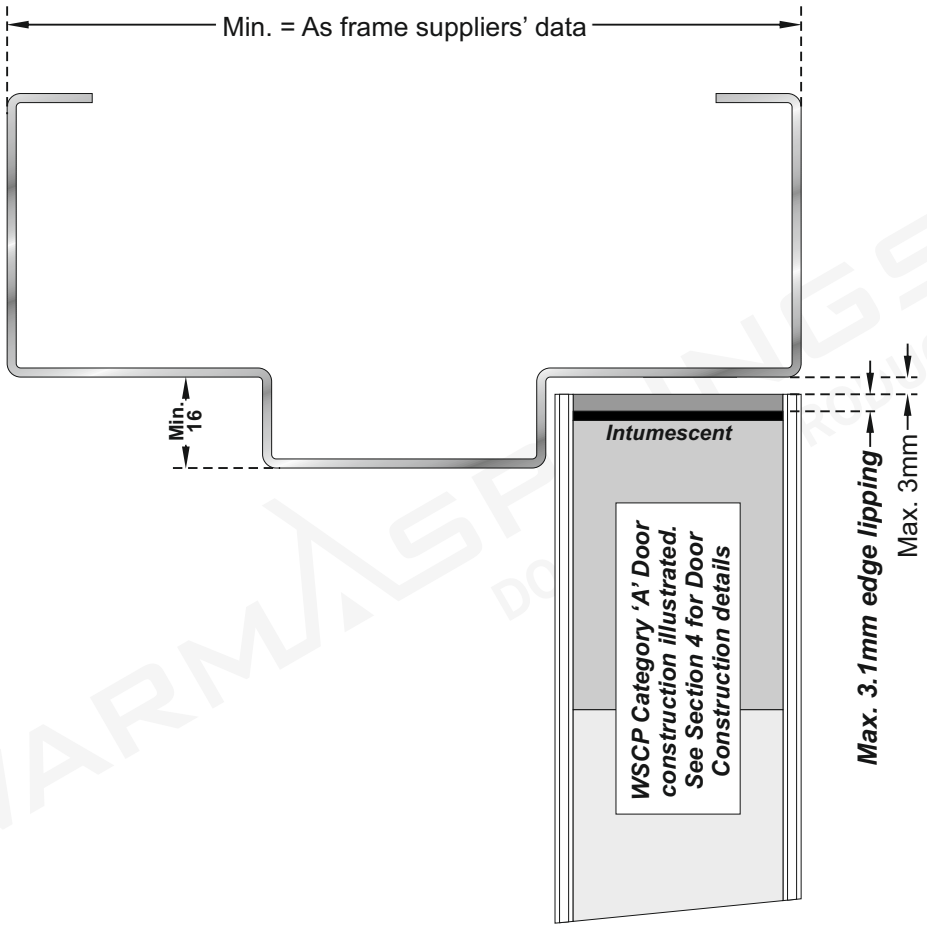
Sincerely,

Timm J. Schaeffer
Engineer/Manager of Inspections
Intertek
Certification and Surveillance Services – Building Products

Intertek Intertek Intertek Intertek Intertek Intertek Intertek

Listed & Labeled Hollow Metal Frames.
WSCP Category 'A' Door Constructions

Fig. 6.1



WSCP Category 'A' Positive pressure door designs can be used with Listed and approved steel frames up to the maximum performance described for the particular door construction *OR* as approved by reference to the steel frame manufacturers data, (*whichever is the lesser performance*).

See Sections 3 & 4 for door dimensional and performance construction limits.

The maximum approved door leaf dimensions shall be as approved for the particular door construction *OR* as approved by reference to the frame manufacturers data, whichever is the smaller.

See Sections 3 & 4 for door dimensional and performance construction limits.

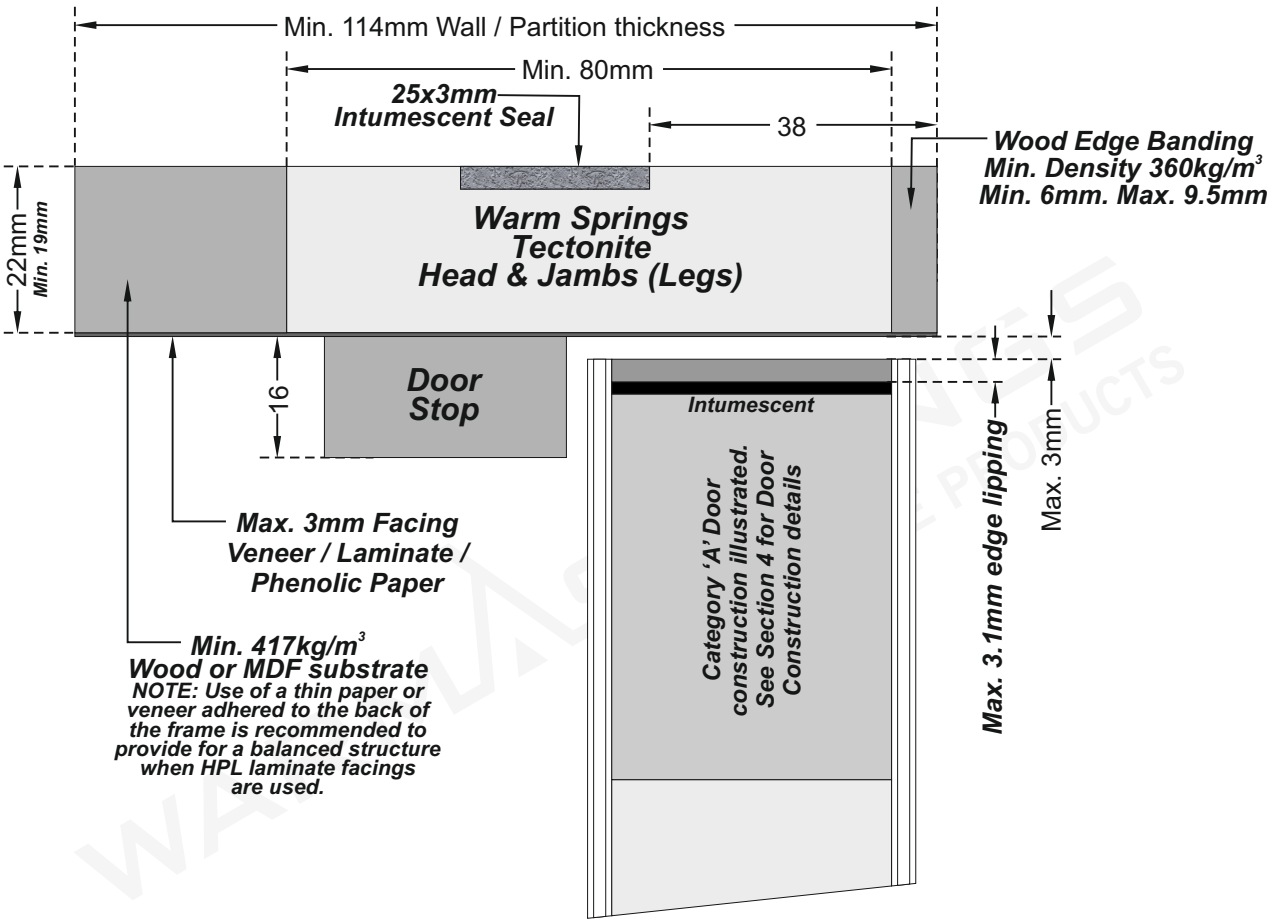
Steel frames shall be listed as approved for use with listed composite door constructions and shall be assembled and installed in accordance with the frame suppliers guidance.

NOTE 1: WSCP Category 'B' door constructions are approved for with steel frames for neutral pressure applications only.

NOTE 2: See Sections 3 ~ 5 for door construction details.

WSCP FRX *'A' Series* Tectonite Proprietary Frame: WSCP Category 'A' Door Constructions.

Fig. 6.2



Warm Springs WSCP FRX ***'A' Series*** - Proprietary Frame -Tectonite Frames for use with Cat. 'A' Doors for Positive Pressure applications and Category 'B' Doors for Neutral Pressure applications. ***(See Sections 3 ~ 5 for door construction details).***

Suitable for single leaf door assemblies up to 90 minutes.
Max. opening height = 2438mm
Max. Opening Width = 1219mm
Min. frame partition thickness = 114mm

Suitable for double leaf (pairs) door assemblies up to 90 minutes.
Max. opening height = 2438mm
Max. Opening Width = 2438mm
Min. frame partition thickness = 114mm

The intumescent at the back of the frame may be surface applied *(i.e. not recessed)* secured with approved adhesive and / or nailed or stapled to the frame head and jambs (*legs*).

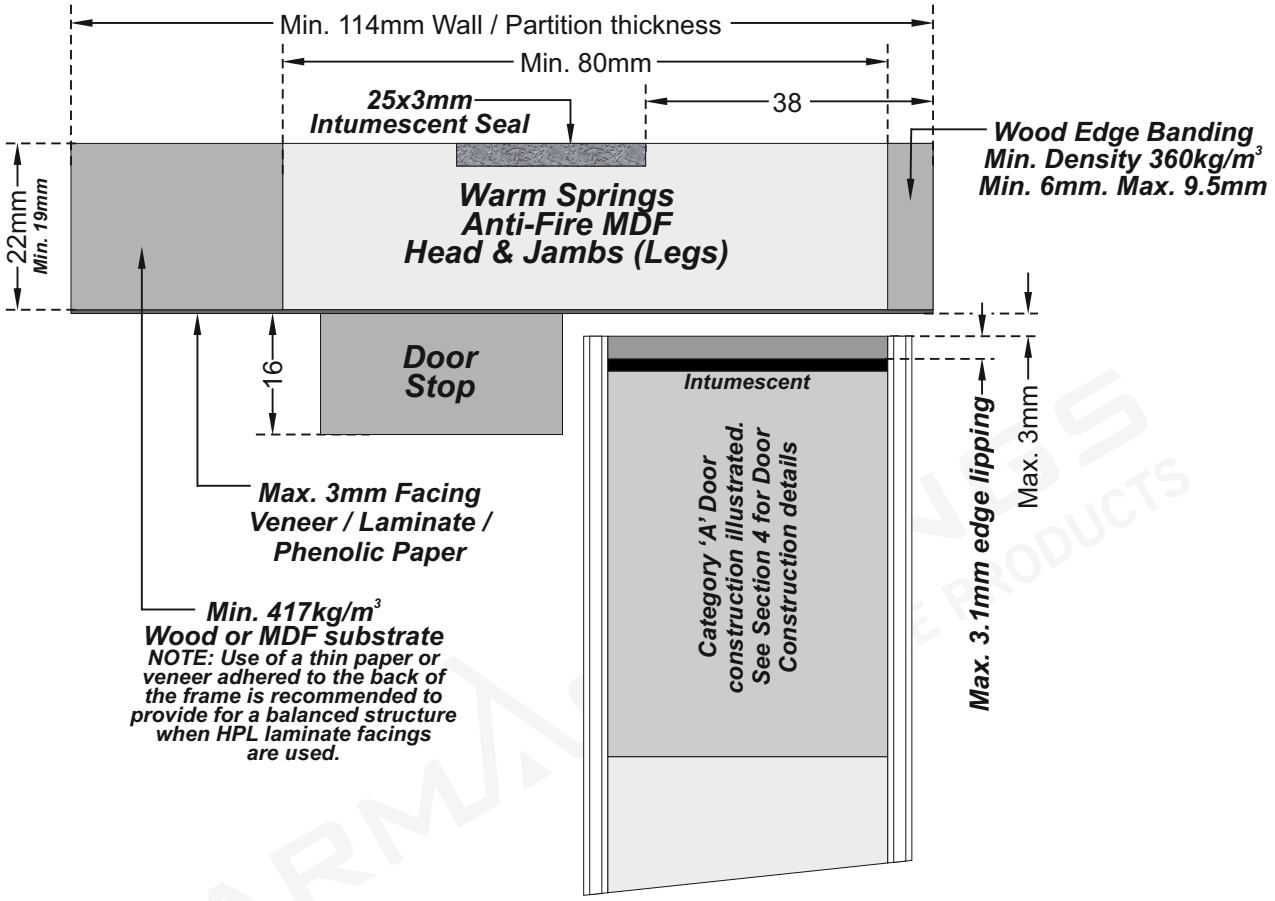
The alternative WSCP 'T' detail door stop *(See Section 7 - Fig. 7.4)* may be used.

NOTE 1: Edge banding to hanging (and closing stiles for single leaf door assemblies) reduced from 6.3mm to 3.1mm if WSCP Cat. A door constructions are used with WSCP FRX 'A' Series frames for positive pressure applications.

NOTE 2: WSCP Cat. B door constructions can be used for Neutral pressure applications.

WSCP FRX *'A' Series* Anti-Fire MDF Proprietary Frame: WSCP Category 'A' Door Constructions.

Fig. 6.3



Warm Springs FRX ***'A' Series*** Proprietary Frame - Anti-Fire MDF Frames for use with Category 'A' Doors for Positive Pressure applications and Category 'B' Doors for Neutral Pressure applications. ***(See Sections 3 ~ 5 for door construction details).***

Suitable for single leaf door assemblies up to 60 minutes.
Max. opening height = 2438mm
Max. Opening Width = 1219mm
Min. frame partition thickness = 114mm

Suitable for double leaf (pairs) door assemblies up to 20 minutes.
Max. opening height = 2438mm
Max. Opening Width = 2134mm
Min. frame partition thickness = 114mm

The intumescent at the back of the frame may be surface applied *(i.e. not recessed)* secured with approved adhesive and / or nailed or stapled to the frame head and jambs (*legs*).

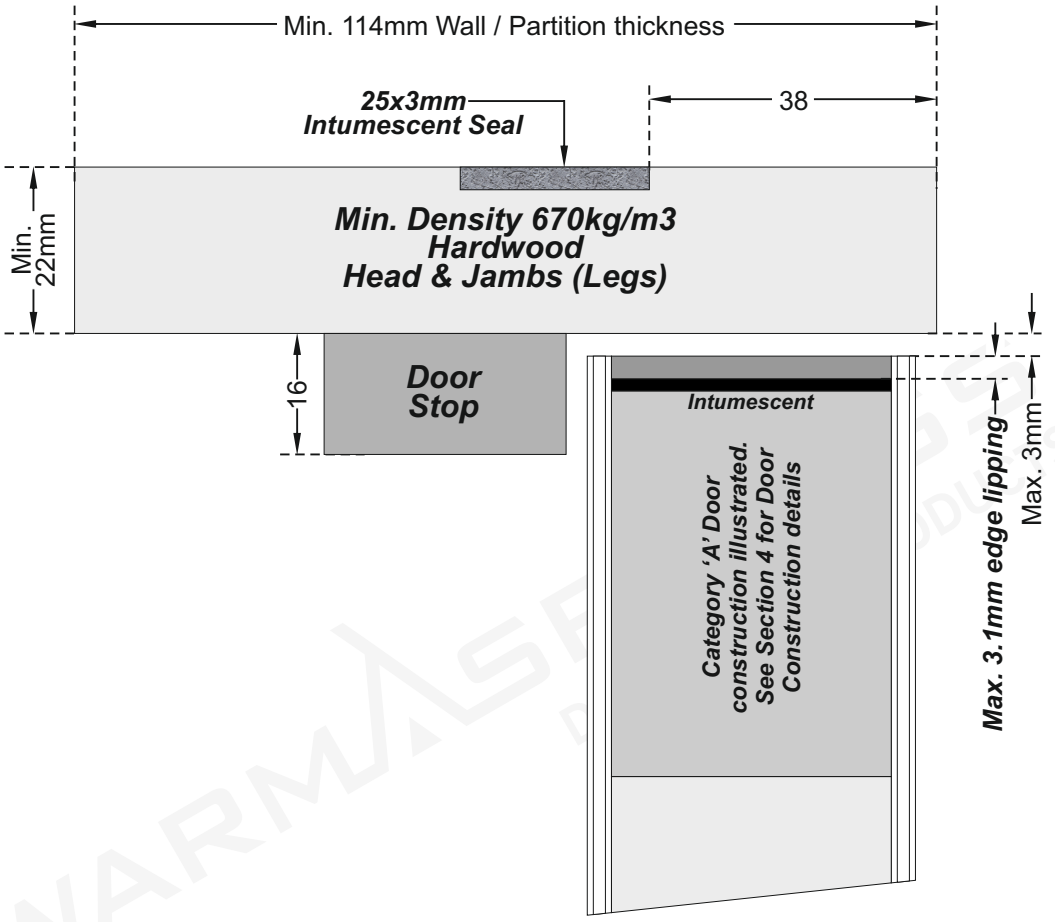
The alternative WSCP 'T' detail door stop *(See Section 7 - Fig. 7.4)* may be used.

NOTE 1: Edge banding to hanging (and closing stiles for single leaf door assemblies) reduced from 6.3mm to 3.1mm if WSCP Cat. A door constructions are used with WSCP FRX 'A' Series frames for positive pressure applications.

NOTE 2: WSCP Cat. B door constructions can be used for Neutral pressure applications.

WSCP FRX *'A' Series* Min. 670kg/m^3 Proprietary Hardwood Frame: WSCP Category 'A' Door Constructions.

Fig. 6.4



WSCP FRX ***'A' Series*** Proprietary Frame - Solid Hardwood Frames (*Density not less than 670kg/m^3*) for use with Category 'A' Doors for Positive Pressure applications and Category 'B' Doors for Neutral Pressure applications. (***See Sections 3 ~ 5 for door construction details).***

Suitable for single leaf door assemblies up to 45 minutes.
Max. opening height = 2438mm
Max. Opening Width = 1219mm
Min. frame partition thickness = 114mm

NOT APPROVED for double leaf (pairs) door assemblies

The intumescent at the back of the frame may be surface applied *(i.e. not recessed)* secured with approved adhesive and / or nailed or stapled to the frame head and jambs (*legs*).

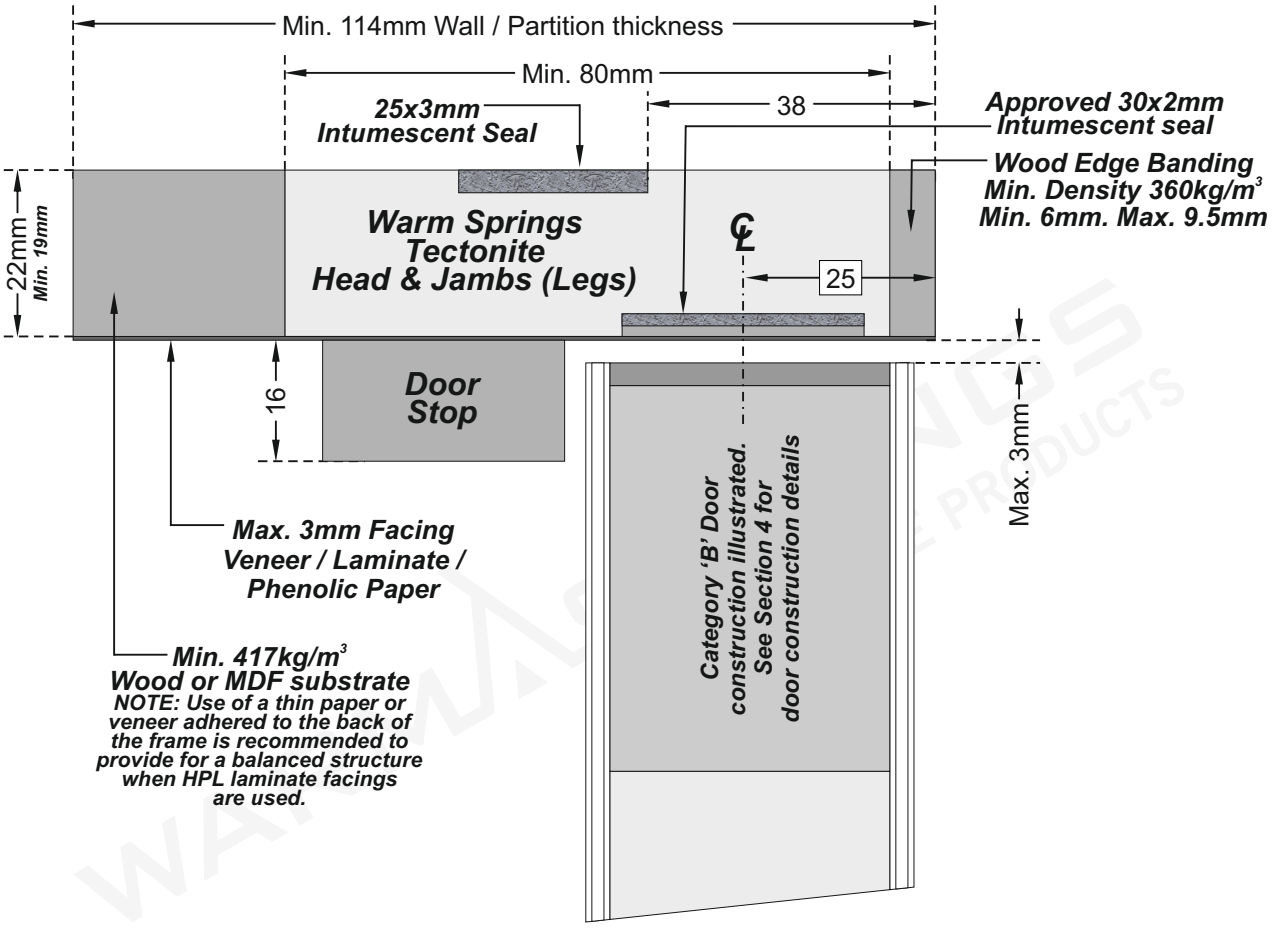
The alternative WSCP 'T' detail door stop *(See Section 7 - Fig. 7.4)* may be used.

NOTE 1: Edge banding to hanging (and closing stiles for single leaf door assemblies) reduced from 6.3mm to 3.1mm if WSCP Cat. A door constructions are used with WSCP FRX 'A' Series frames for positive pressure applications.

NOTE 2: NOTE 2: WSCP Cat. B door constructions can be used for Neutral pressure applications.

WSCP FRX *'B' Series* Tectonite Proprietary Frame: WSCP Category 'B' Door Constructions.

Fig. 6.5



Warm Springs WSCP FRX ***'B' Series*** Proprietary Frame - Tectonite Frames for use with Category 'B' Doors for Positive Pressure applications. (***See Sections 3 ~ 5 for door construction details***).

Suitable for single leaf door assemblies up to 90 minutes.
Max. opening height = 2438mm
Max. Opening Width = 1219mm
Min. frame partition thickness = 114mm

Suitable for double leaf (pairs) door assemblies up to 90 minutes.
Max. opening height = 2438mm
Max. Opening Width = 2438mm
Min. frame partition thickness = 114mm

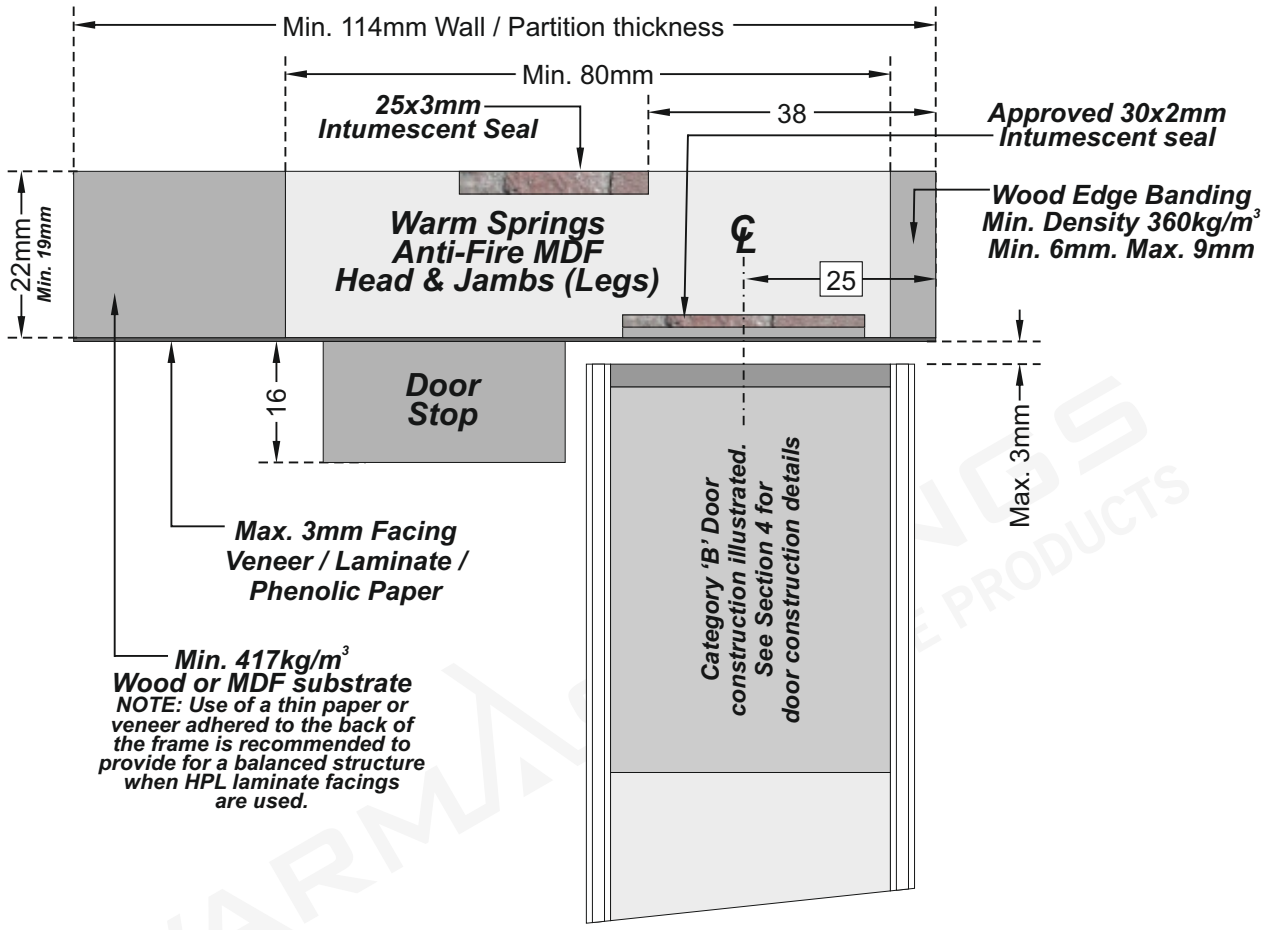
NOTE: Listed intumescent seals (Fitherm PS-100 = 2mm, Palusol 100 = 2mm, Zero 2002 or 2003 = 2mm) must be added at the meeting stiles of double leaf doors (pairs).

The intumescent at the back of the frame may be surface applied *(i.e. not recessed)* secured with approved adhesive and / or nailed or stapled to the frame head and jambs (*legs*).

The alternative WSCP 'T' detail door stop *(See Section 7 - Fig. 7.4)* may be used.

WSCP FRX *'B' Series* Anti-Fire MDF Proprietary Frame: WSCP Category 'B' Door Constructions.

Fig. 6.6



Warm Springs WSCP FRX ***'B' Series*** Proprietary Frame - Anti-Fire MDF Frames for use with Category 'B' Doors for Positive Pressure applications. (***See Sections 3 ~ 5 for door construction details***).

Suitable for single leaf door assemblies up to 60 minutes.
Max. opening height = 2438mm
Max. Opening Width = 1219mm
Min. frame partition thickness = 114mm

Suitable for double leaf (pairs) door assemblies up to 20 minutes.
Max. opening height = 2438mm
Max. Opening Width = 2134mm
Min. frame partition thickness = 114mm

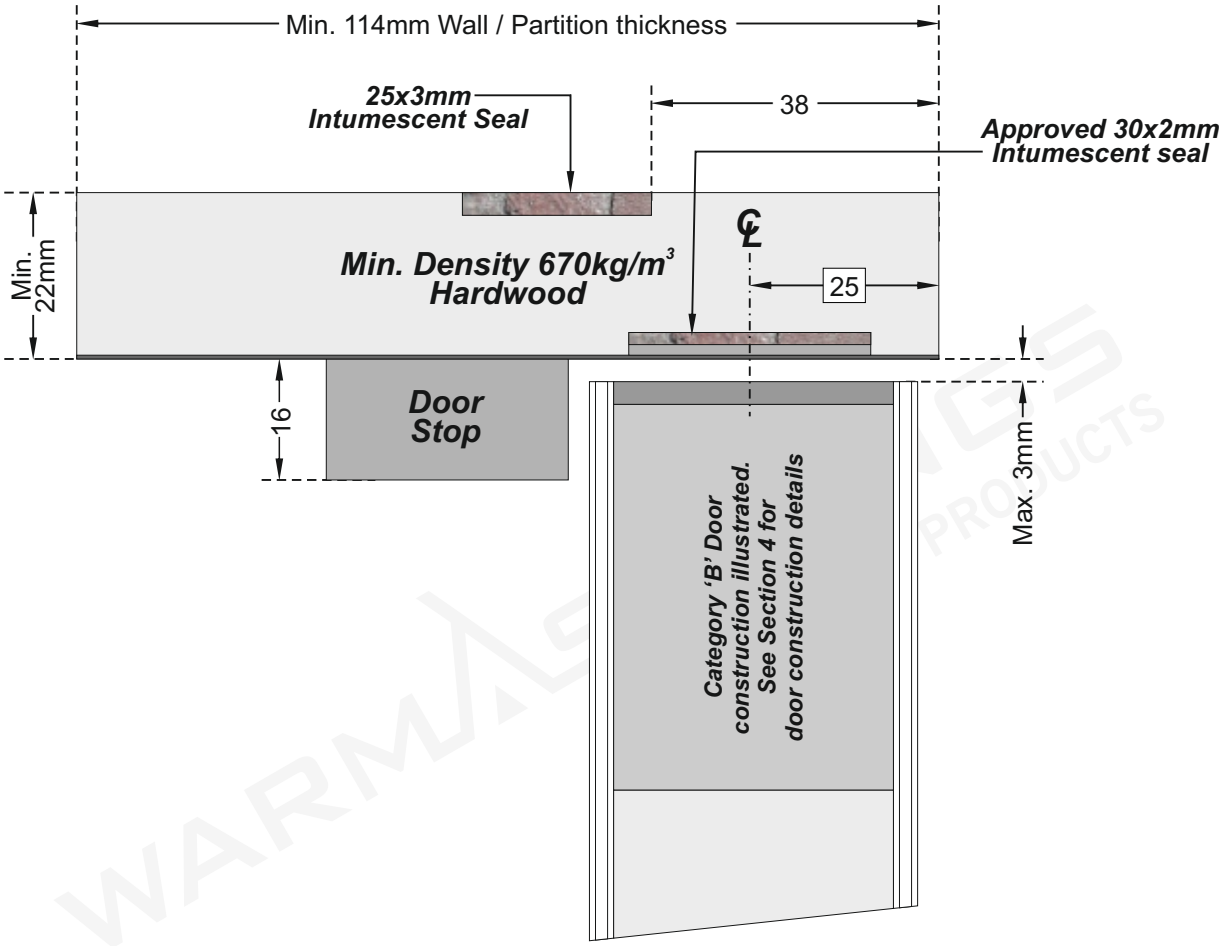
NOTE: Listed intumescent seals (Palusol 100 = 2mm, Zero 2002 or 2003 = 2mm, Fitherm PS-100 = 2mm) must be added at the meeting stiles of double leaf doors (pairs).

The intumescent at the back of the frame may be surface applied *(i.e. not recessed)* secured with approved adhesive and / or nailed or stapled to the frame head and jambs (*legs*).

The alternative WSCP 'T' detail door stop *(See Section 7 - **Fig. 7.4**)* may be used.

WSCP FRX *'B' Series* Min. 670kg/m^3 Proprietary Hardwood Frame: WSCP Category 'B' Door Constructions.

Fig. 6.7



WSCP FRX ***'B' Series*** Proprietary Frame - Solid Hardwood Frames (*Density not less than 670kg/m^3*) Frames for use with Category 'B' Doors for Positive Pressure applications. **(*See Sections 3 ~ 5 for door construction details*).**

Suitable for single leaf door assemblies up to 45 minutes.
Max. opening height = 2438mm
Max. Opening Width = 1219mm
Min. frame partition thickness = 114mm

NOT APPROVED for double leaf (pairs) door assemblies

The intumescent at the back of the frame may be surface applied *(i.e. not recessed)* secured with approved adhesive and / or nailed or stapled to the frame head and jambs (*legs*).

The alternative WSCP 'T' detail door stop *(See Section 7 - Fig. 7.4)* may be used.

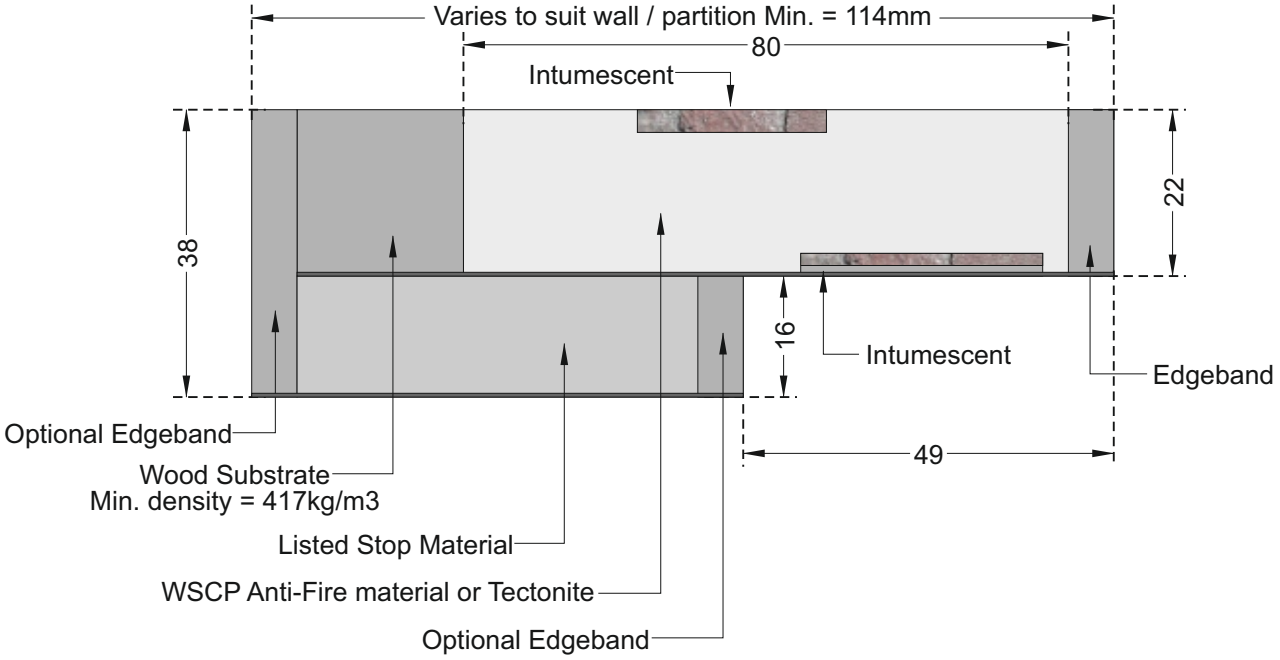
Section 7: Door Frame Detail

Section 7 describes approved details for the construction of WSCP FRX frame designs.

All components used to make up frame sections must be bonded together using the Listed adhesives described by reference to ***Section 8.***

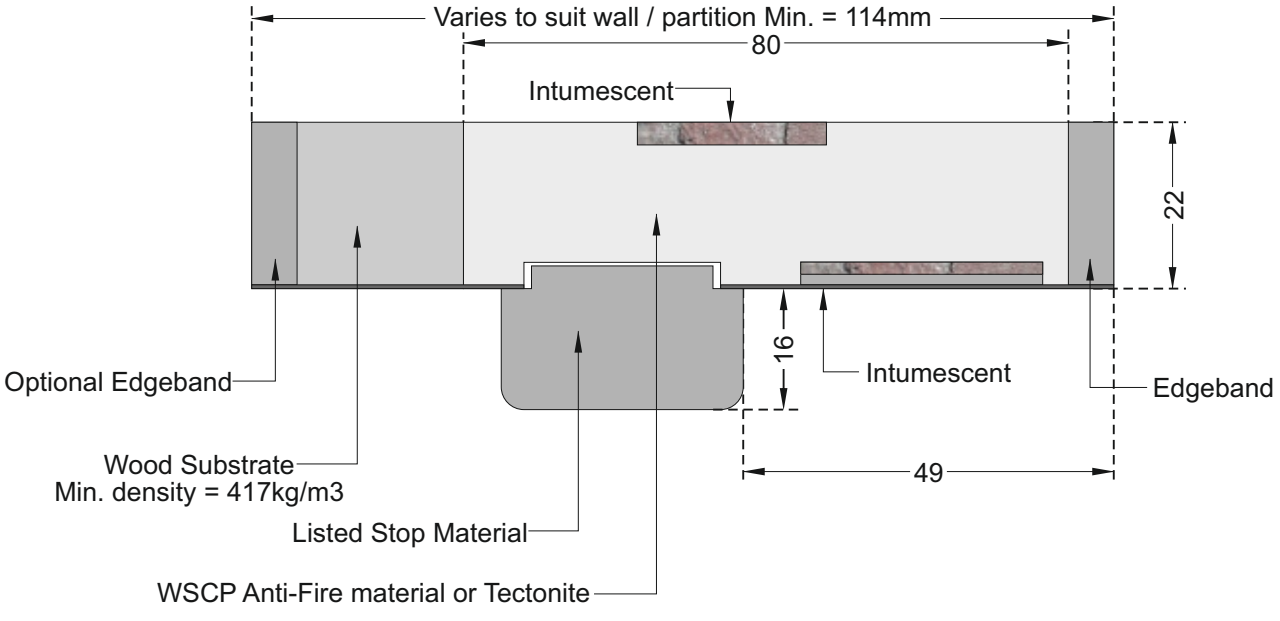
Typical WSCP FRX *'B' Series* Rebated Frame

Fig. 7.1



Typical WSCP FRX *'B' Series* 'T' Stop Frame

Fig. 7.2



Door Frame Details

Door Frame Details - Listed Door Stop Materials.

Fig. 7.3

Door Stops:

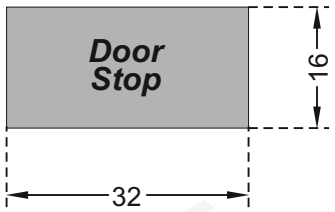
Door stops - Min. dimensions 32x16mm - can be manufactured using:

Min. 360kg/m^3 timber. - (***Including finger jointed wood***) - Suitable for performances up to 60mins.

Min. 720kg/m^3 Veneer clad MDF (*medium density fibreboard*). - Suitable for performances up to 90mins.

Min. 420kg/m^3 Hardwood. - (***Including finger jointed wood***) - Suitable for performances up to 90mins.

Minimum approved door stop dimensions Rectangular section.



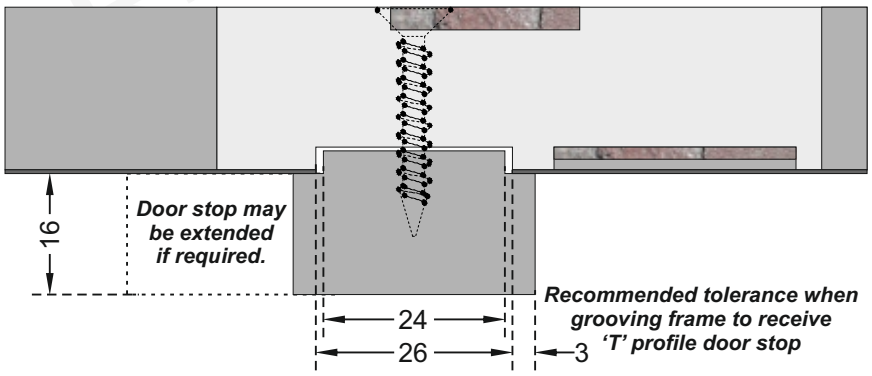
Min. 977kg/m^3 Veneer Clad WSCP Tectonite. - Suitable for performances up to 90mins.

The door stop should overlap the face of the door by Nom. 13mm. i.e. a 16mm door stop is required to cover the operating gap and to provide for the cover over the door face.

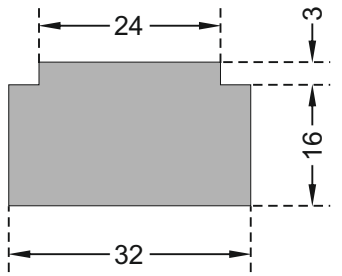
Door stops are to be laminated to the frame Jambs (*Legs*) and Head with adhesive and / or screwed to the frame Jambs (*Legs*) and Head from the back side of the frame components with#6 wood screws to a depth of 50 ~ 75% into the door stop thickness and positioned at Nom. 400mm centres beginning at 100mm from either end of the component.

Door Stop Fixing.

Fig. 7.4



Minimum approved door stop dimensions 'T' profile section.



Door Stop Fixing:

Door stops can be face fixed through the stop with adhesives and mechanical fixings covered by pellets or fillers.

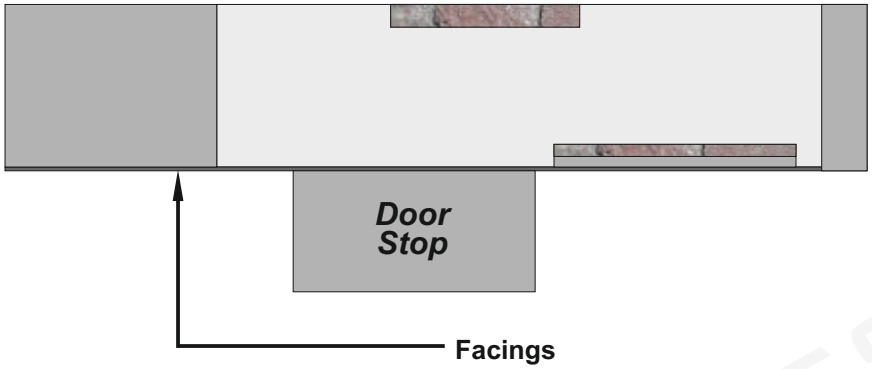
Alternatively door stops can be fixed prior to the installation of the frame by back fixing through the jambs (*legs*) and head.

The use of 'T' stops (*illustrated*) can also be considered. These prevent light from being seen around the door stop and provide for improved slamming resistance.

See Section 9 - pages 9.3 & 9.4 Figs. 9.4 & 9.5

Listed Frame Facing Materials

Fig. 7.5



Frame Facing Materials:

Listing permits frame Jambs (legs) and the Head to be faced with the following materials:

Wood Veneer - Flat laminated or veneer wrapped - Max. approved thickness = 3mm - Approved for fire doors up to 90mins.

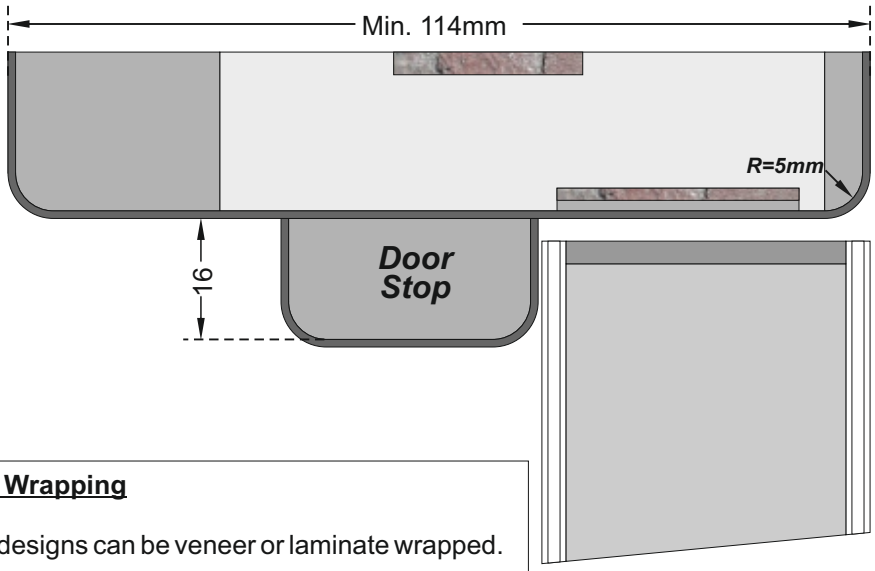
High Pressure Laminates (HPL) - Max approved thickness = 1.6mm - Approved for fire doors up to 60mins.

Phenolic Paper - Flat or laminate wrapped.

NOTE: The same facing materials can be applied to the door stops.

Veneer or HPL wrapped.

Fig. 7.6



Veneer & HPL Wrapping

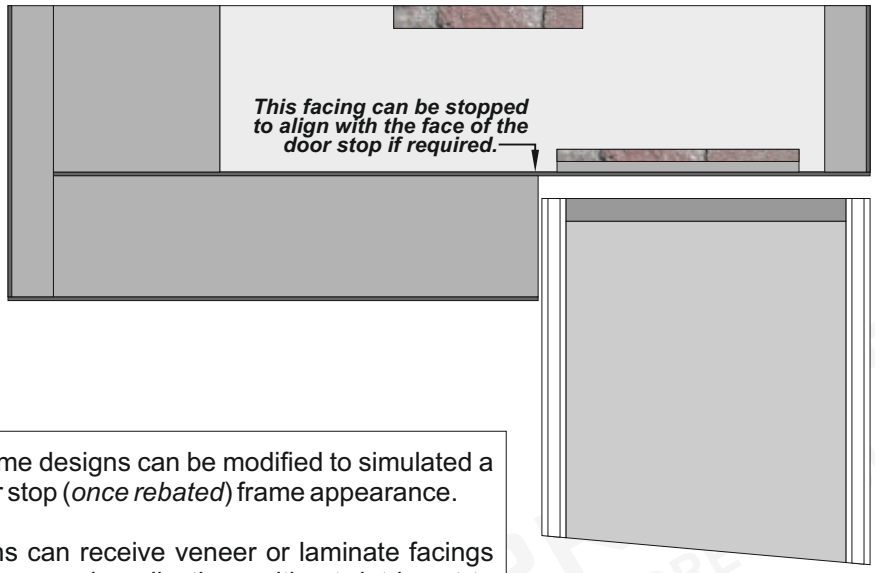
WSCP Frame designs can be veneer or laminate wrapped.

See *Fig. 7.5* for performance limitations.

Door Frame Details

Moulded Door Stop (*Once Rebated*) Appearance.

Fig. 7.7

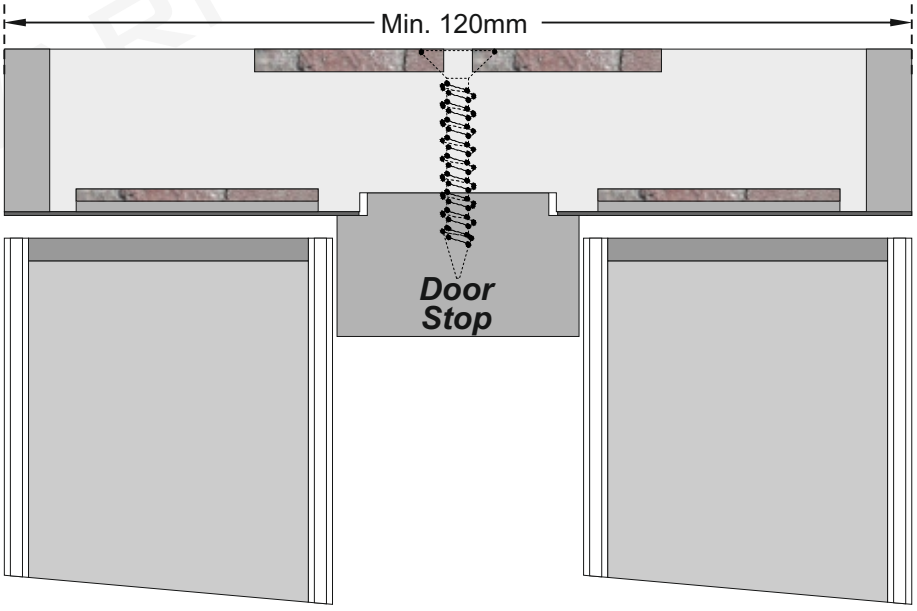


All WSCP frame designs can be modified to simulated a moulded door stop (*once rebated*) frame appearance.

These designs can receive veneer or laminate facings using flat or wrapped applications without detriment to listed performances described in ***Section 6.***

Communicating Door Frames.

Fig. 7.8



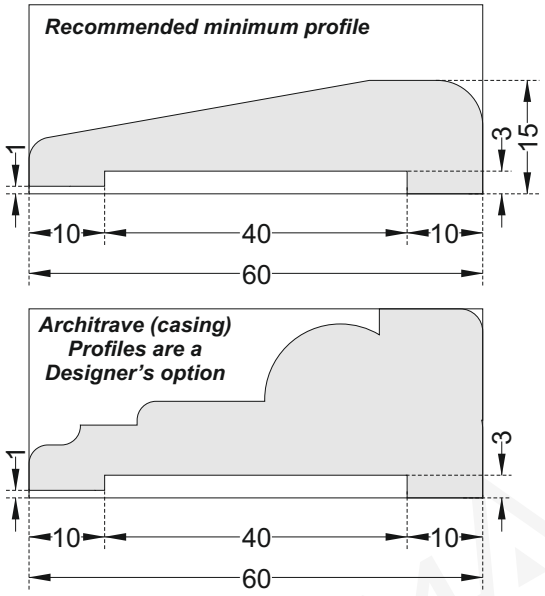
All WSCP frame designs can be modified to provide for communicating door applications. i.e. doors hung on both sides of the frame.

NOTE 1: The maximum approved performances remain the same as that approved for a single leaf door / frame described by reference to Section 6 for the particular base frame design.

NOTE 2: Intumescent seals must be installed to both sides of the door stop (as illustrated).

Architrave *(Casings).*

Fig. 7.9



All WSCP frame designs are certified with min. 60mm (*350kg/m³*) softwood architrave (*casings*) for all performances up to 90mins.

Approved materials:

- Wood - Veneer wrapped.
- Wood - HPL Laminated.
- Wood - Solid.
- Wood - Finger-joint & wrapped.
- Wood - Painted.
- MDF - Veneer wrapped or painted.
- Extruded Foam - All Types.
- Metal - All Types.

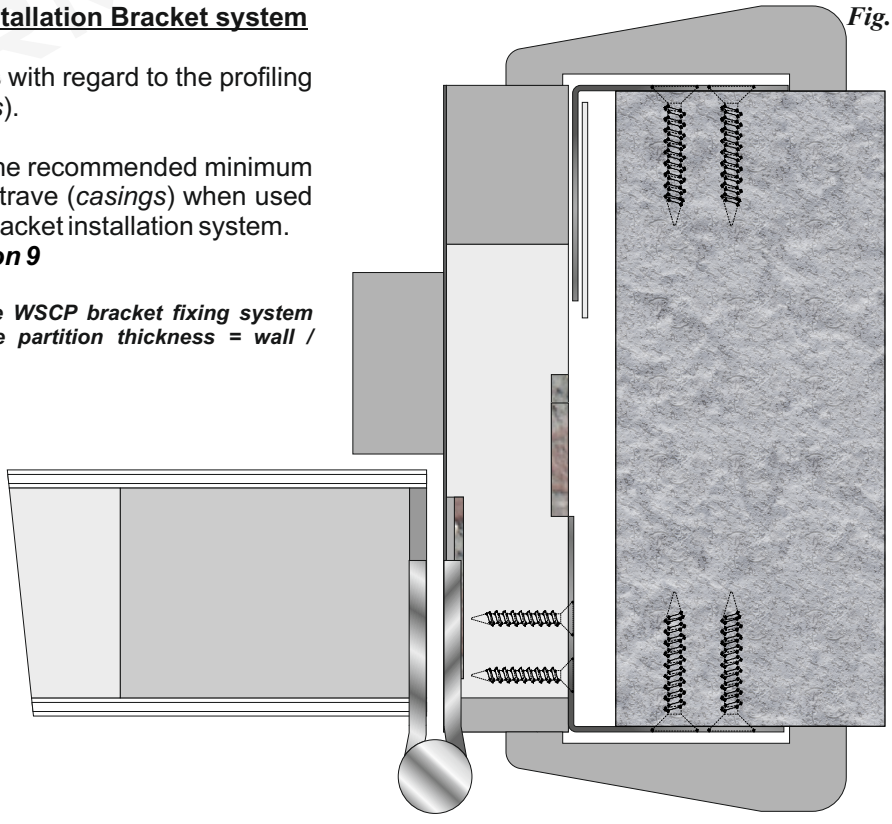
Profiles and WSCP Installation Bracket system

Fig. 7.10

There are no restrictions with regard to the profiling of the architrave (*casings*).

These details illustrate the recommended minimum dimensions for the architrave (*casings*) when used with the WSCP unique bracket installation system.
See Installation - Section 9

NOTE: When used with the WSCP bracket fixing system (illustrated) the total frame partition thickness = wall / partition thickness +2mm.



Section 8: Adhesives

Section 8. Lists approved adhesives for the construction of WSCP door and frame designs.

Approved Adhesives
Thermal-Lite / WSCP-412
& STC Door Constructions

Fig. 8.1

LISTED ADHESIVES - DOOR CONSTRUCTION

		APPLICATION		
SOURCE	**TYPE OR Reference**	**Stile & Rails to Core**	**Intumescent & Wood to Stiles & Rails**	**Faces & Veneers to Banded Core**
Borden	CASCO 42-28	✓	✓	✓
Borden	CASCO S97	✓	✓	✓
Borden	WB 955-A	✓	✓	✓
Borden	WB DB 985	✓	✓	✓
Borden	WB 1117	✓	✓	✓
H. B. Fuller	RK 8490	✓	✓	✓
National Casein	4420	✓	✓	✓
National Casein	8580	✓	✓	✓
National Casein	230	✓	✓	✓
National Starch	Dor-Loc 42-4011	✓	✓	✓
Specialty Polymers	WD 1300	✓	✓	✓
Kleiberit	303	✓	✓	✓
Kleiberit	308	✓	✓	✓
Kleiberit	501	✓	✓	✘
SEACO	5-4253	✓	✓	✘
SEACO	5-4239	✓	✓	✘
Henkel	-	✓	✓	✘
Doral	2539	✘	✘	✓
All Hot Melt Adhesives	-	✓	✘	✘

Users must follow the specific instructions of the adhesive manufacturer for:

- Storage conditions.
- Shelf Life.
- Method of application.
- Coverage.
- Assembly time.
- Press parameters.
- Safe use practices.

All Hot-Melt Adhesives are approved for adhering stiles and rails to mineral core and, core to core in the construction of a banded core.

Approved Adhesives
WSCP Frames

Frame Adhesives:

The strength and integrity of WSCP Frame systems lie in the substrates (*Anti-Fire MDF and Tectonite*) within the system and by use of the recommended metal brackets for installation. The use of specific adhesives, in relation to fire or heat resistance, is not applicable since the frame legs are of a one piece construction and adhesives are not used to provide for structural integrity or strength to any portion of the system. Although bonding agents are used to adhere the intumescent into the hinge side of the frame leg and to bond the wood edge-band to the frame leg edge, a specific rated glue is not necessary.

The type of adhesive used for a specific application is at the discretion of the manufacturer. However, WSCP recognises that quality bonding agents need to be used on all substrates within the system to provide for an enduring and stable product during normal use of the door opening and to that extent recommends consideration of the following:

Fig. 8.2

LISTED ADHESIVES - FRAME CONSTRUCTION

SOURCE	REFERENCE	TYPE	USAGE
Casein	4420/BX800	Powder (H20 mix).	Veneer / Stops / Edge Bands.
Borden	Cascorez IB-S30	White Glue.	Veneer / Stops / Edge Bands / Palusol.
Borden	955-A	White Glue.	Facings to frame substrates.
Borden	985	White Glue.	Facings to frame substrates.
SEACO	5-4239	White Glue.	Veneer / Stops / Edge Bands / Palusol.
SEACO	5-4380	White Glue.	Veneer / Stops / Edge Bands / Palusol.
Kleiberit	C114/5	Contact.	Veneer.
Kleiberit	501	Polyurethane / Solid	Stops / Edge Band / Palusol.
Kleiberit	502.1	Polyurethane / Solid	Stops / Edge Band / Palusol.
Kleiberit	303	White Glue.	Facings to frame substrates.

Users must follow the specific instructions of the adhesive manufacturer for:

- Storage conditions.
- Shelf Life.
- Method of application.
- Coverage.
- Assembly time.
- Press parameters.
- Safe use practices.

Section 9: Door Frame Assembly & Installation

Section 9 suggests:

- Coordinating points for determining dimensions for frame components.
- Recommended methods for determining component dimensions.
- Use of the WSCP installation bracket system.
- Recommendations for the location of hardware.

NOTE: Each manufacturer will have their own preferred method of manufacture that may vary according to a number of factors. This section provides for guidance with regard to issues that need to be considered.

Door Assembly Coordination:

When manufacturing frame sections to produce jamb (*leg*) and head components identified by reference to ***Sections 6 & 7*** it is necessary in the first instance to determine the wall / partition dimension into which the frame is to be fitted.

If the WSCP installation bracket system is being used the frame partition thickness (*dimension* ***'g'***) should be the wall partition thickness +2mm.

The next stage is to cut the jamb (*leg*) and head dimensions to length = dimensions ***'c'*** & ***'e'*** **or** ***'f'***. ***(See NOTE 3 below).***

These dimensions are generally determined by reference to the opening dimensions on site and should provide for the following installation tolerances:

Frame width = ***'c'*** = Wall / partition opening width (*minus*) - 10mm +/- 2mm.

Frame Height = ***'f'*** = Wall / Partition opening height (*minus*) - 5mm +/- 1mm.

Door Assembly Dimension References *Fig. 9.1*

Door leaf height & Width:

Door leaf height and width dimensions can then be determined allowing for the following:

Door leaf height = Frame height ***'f'*** (*minus*) - head thickness = Shoulder height ***'e'*** (*minus*) - Head operating tolerance (*minus*) - Threshold clearance = Door Height ***'d'***.

NOTE 1: The operating tolerance (clearance between the door leaf and the frame) at the head must not exceed 3mm to comply with Listed approvals. -

NOTE 2: The Head thickness can vary according to the thickness of facings applied.

NOTE 3: Jambs (legs) are cut to length to suit the Shoulder height 'e' for butt jointed head to jambs or to the frame height 'f' if the head is mortise & tenon jointed to the jambs. See page 9.2 - *Figs. 9.2 & 9.3.*

NOTE 4: The under door (threshold) gap is likely to vary according to the floor design and floor finishes that may not be known at the time of manufacture of the frame. It is recommended that a 25mm threshold gap is allowed for the purpose of manufacture with the Jambs (legs) reduced on site to suit individual location requirements.

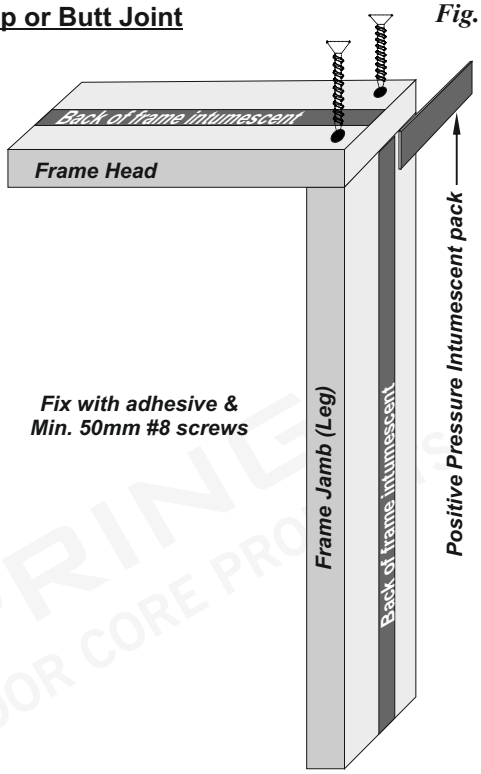
Door leaf width = Frame width ***'c'*** (*minus*) - 2x jamb (*leg*) thickness = Shoulder width ***'b'*** (*minus*) - 2x Operating tolerance. = Door Width ***'a'***.

NOTE 1: The operating tolerances (clearance between the door leaf and the frame) must not exceed 3mm to comply with Listed approvals. For double leaf door assemblies (pairs) deduct 3x operating tolerance from the Shoulder width 'b' then deduct the width of the widest door to determine the width of the secondary leaf. For an equal pair both door leaf widths will be the same.

NOTE 2: The Jamb (leg) thickness can vary according to the thickness of facings applied.

Method of Jointing:

Lap or Butt Joint *Fig. 9.2*



Frame - Method of Jointing:

The frame head can be Lap (*Butt*) jointed over the Jambs (*Legs*) ***Fig. 9.2.***
OR
Mortise and Tenon jointed. ***Fig. 9.3.***

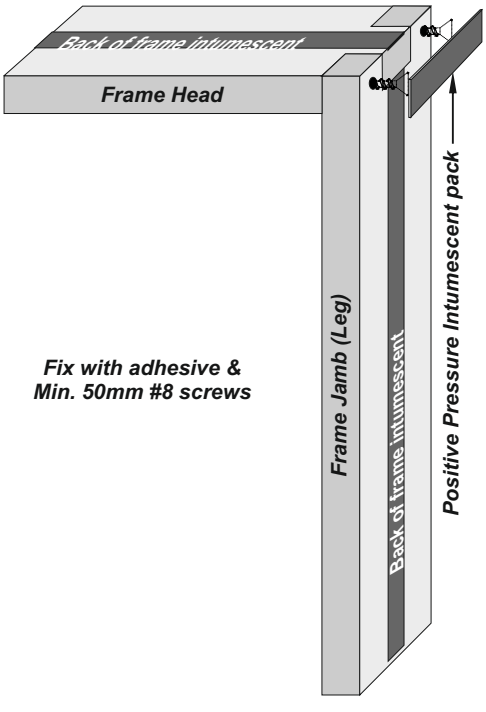
NOTE: The Mortise & Tenon option is recommended for the fitting of Tectonite transom rails where storey height assemblies with solid over panels or fanlights are required.

In both cases the head must be bonded to the Jambs (*Legs*) using approved adhesives and used with assembly screw fixings into pilot holes.

For Positive Pressure applications, the back of frame intumescent must extend to the full length of the frame head. ***Figs. 9.2 & 9.3.***

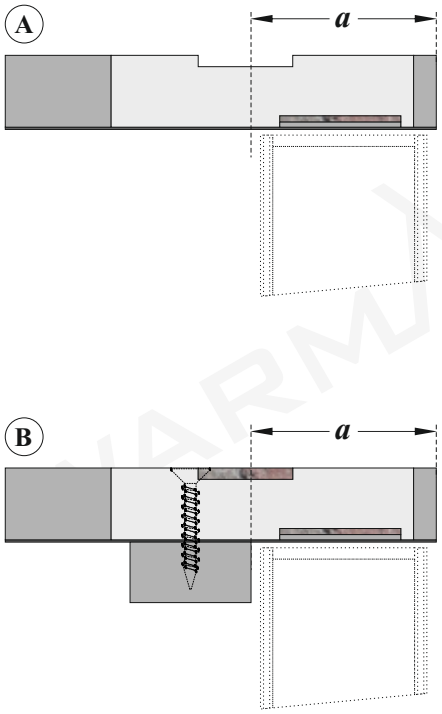
The Back of frame intumescent to the jambs (*legs*) is stopped at the junction with the head. It is then necessary to apply the supplied intumescent pad to the ends of the head section to effectively linking the jamb (*leg*) and head back of frame intumescent sealing. ***Figs. 9.2 & 9.3.***

Mortise & Tenon Joint *Fig. 9.3*



Locating Door Stop - Rectangular:

Fig. 9.4



Locating Door Stop - Rectangular:

The door stop can be fitted following the assembly of the frame lining (*Legs & Header*).

Determine the finished thickness of the door - this can vary according to the facings that are applied to the door construction.

Mark the frame to identify the position of the door stop relative to the face of the door (*dim.* ***'a'***). ***Fig. 9.4A.***

NOTE 1: Unless otherwise determined in advance of manufacture WSCP will allow for a dimension of 49mm for dim. 'a' to suit a 44 ~ 45mm thickness door.

NOTE 2: The gap between the closing face of the door and the face of the door stop (dim. 'a') must be pre determined and adjusted as necessary to accommodate seals / gaskets depending upon the type of seal / gasket and its method of fixing.

Drill pilot holes and countersink from the back of the frame to align centre of the door stop width and fit the stops using approved adhesive and #6 wood screws to a depth of 50 ~ 75% into the door stop thickness. ***Fig. 9.4B.***

The fixing positions must be:

- Not more than 100mm from each end of the door stop for both Jamb (*leg*) and Head stops.
- Intermediary fixings equi-spaced at not more than 400mm centres.
- Not less than 3No. fixings per stop length.

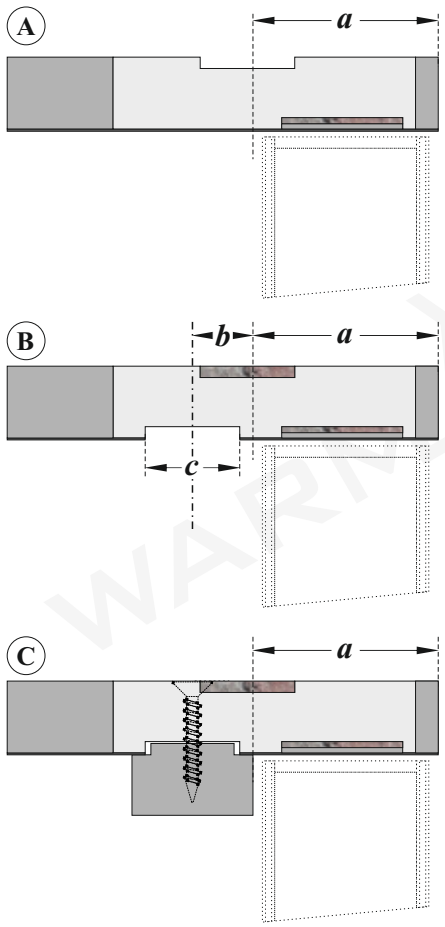
Corners between the vertical and horizontal door stops can be butt jointed or mitred.

NOTE: The back of frame intumescent seal required for Positive pressure applications is fitted by WSCP in advance of delivery of the frame components.

Locating Door Stop - 'T' Profile:

Locating Door Stop - 'T' Profile:

Fig. 9.5



Where the 'T' profile door stop is butt jointed the door stop can be fitted following the assembly of the frame.

Where the 'T' profile door stop is to be mitre (*miter*) jointed the door stop should generally be fitted to the Jambs (*Legs*) and Head before assembly of the frame with the door stop pre sized and mitred (*mitered*).

Determine the finished thickness of the door - this can vary according to the facings that are applied to the door construction.

Mark the frame to identify the position of the door stop relative to the face of the door (***dim. 'a'***). ***Fig. 9.5A.***

NOTE 1: Unless otherwise determined in advance of manufacture WSCP will allow for a dimension of 49mm for dim. 'a' to suit a 44 ~ 45mm thickness door.

NOTE 2: The gap between the closing face of the door and the face of the door stop (dim. 'a') must be pre determined and adjusted as necessary to accommodate seals / gaskets depending upon the type of seal / gasket and its method of fixing.

Mark the frame on the door stop face to locate the centre width position for the door stop. (***dim. 'b'***) ***Fig. 9.5B***.

Groove face of Jambs (*Legs*) and Head to receive the 'T' section door stop ***(dim. 'c') Fig. 9.5B - See also Section 7 Page 7.2 - Fig. 7.3.***

Drill pilot holes and countersink from the back of the frame to align centre of the door stop width and fix the stops using approved adhesive and #6 wood screws to a depth of 50 ~ 75% into the door stop thickness. ***Fig. 9.5C.***

The fixing positions must be:

- Not more than 100mm from each end of the door stop for both Jamb (*leg*) and Head stops.
- Intermediary fixings equi-spaced at not more than 400mm centres.
- Not less than 3No. fixings per stop length.

Corners between the vertical and horizontal door stops can be butt jointed or mitred.

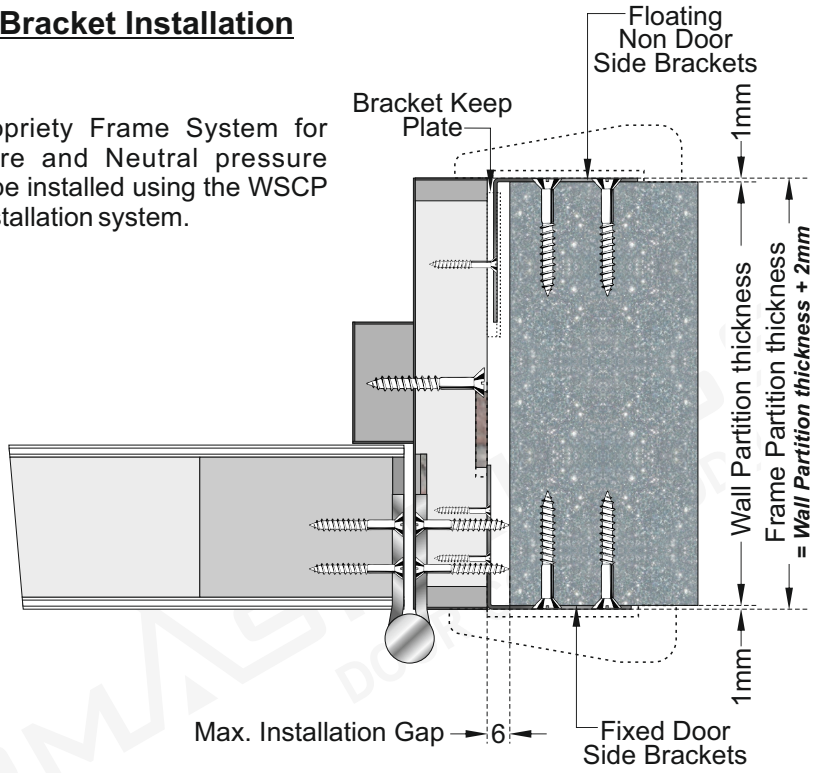
NOTE: The back of frame intumescent seal required for Positive pressure applications is fitted by WSCP in advance of delivery of the frame components.

WSCP Bracket Installation System:

Fig. 9.6

WSCP Fixing Bracket Installation System:

WSCP FRX Propriety Frame System for Positive Pressure and Neutral pressure applications can be installed using the WSCP unique bracket installation system.

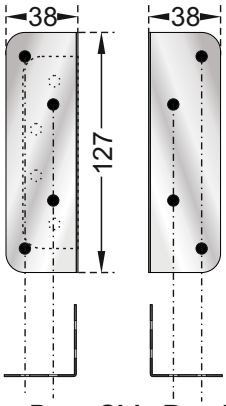


WSCP Bracket Installation System - Components:

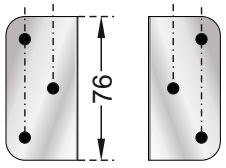
Fig. 9.7

Door Side Fixing Brackets

Hinge Location Brackets

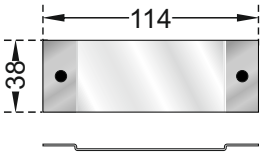


Other Door Side Brackets

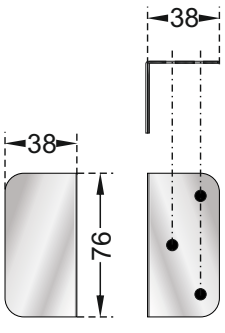


Non Door Side Fixing Brackets

Bracket Keep Plate



Non Door Side Fixing bracket



The WSCP bracket fixing system is manufactured from 20g (US) steel and consists of 4 components:

1/ Door side hinge location brackets.

2/ Door side brackets for non hinge positions.

3/ Non door side - back of frame bracket keep plate.

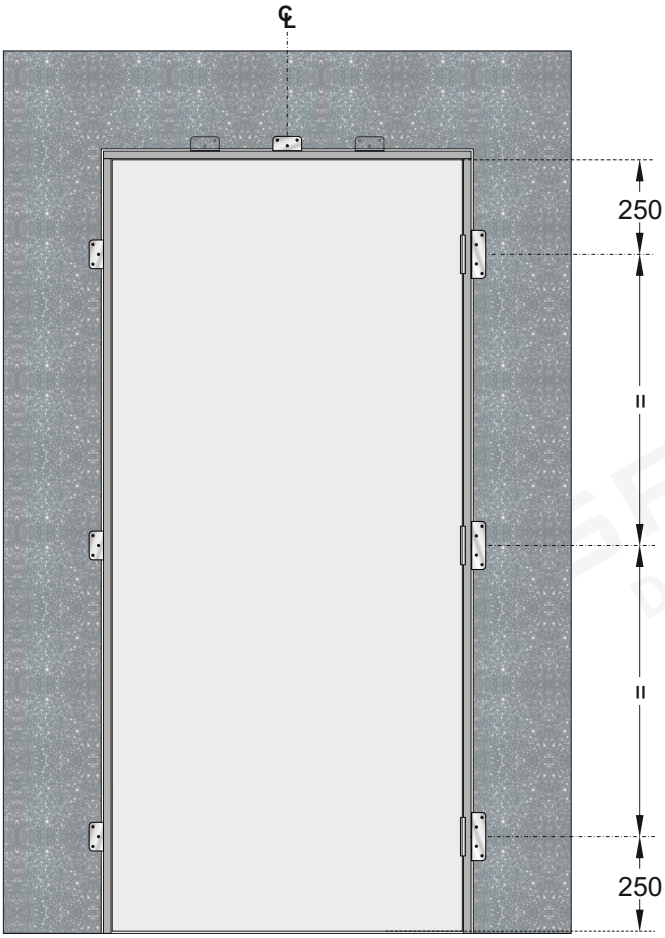
4/ Non door side fixing bracket.

NOTE: Brackets 2 & 4 are essentially th same product but bracket 4 is not screwed to the back of the frame.

WSCP Bracket Installation System - Bracket Locations:

WSCP FRX Frame Installation System: *To view a video showing door assembly installation using the unique WSCP clip system click here:*

Recommended Bracket Locations *Fig. 9.8*



Door Assembly Installation:

Irrespective of whether or not the WSCP Bracket Installation system is used, the openings to receive the door assemblies must be plumb and square.

The fitting in tolerance between the frame and the surrounding structure must not exceed 6mm at each Jamb (*Leg*) and at the head.

The door side brackets are and the non-door side keep plates are fitted to the frame in advance of installation of the assembly into the location opening. ***See Page 9.7 - Figs. 9.9 & 9.10***

The assembly should be located centrally in the opening width.

Fig. 9.8 illustrates the minimum requirement for the location of fixing brackets for door assemblies up to 2100mm high with doors hung on Listed & Labelled hinges. (***See Section 10 Hardware***).

An additional hinge should be used for door assembly heights above 2100mm with additional brackets added to suit.

NOTE: The location dimensions shown in Fig. 9.8 are related to the door leaf. It is necessary to increase these dimensions to accommodate operating clearances when locating brackets in the frame jambs (legs).

A single bracket can be used in width at the frame head for single leaf door assemblies up to 914mm wide. For assembly widths in excess of 914mm an additional head fixing bracket must be used with these positioned equi-distant in width.

Additional 76mm door side brackets may be used to provide for improved stability based upon considerations of door weight (*including hardware*), nature of the surrounding structure and anticipated frequency of use of the door.

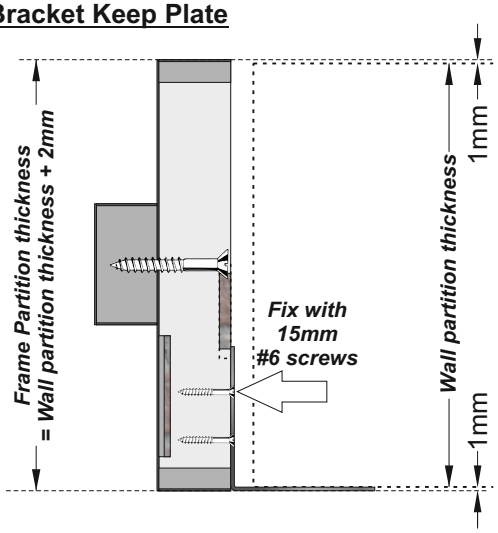
The assembly (*pre fitted with the non-door side bracket keep plate to align with door side fixing brackets* ***See page 9.7*** ***Fig. 9.11.***) is fixed into the opening. The non-door side fixing brackets are then slid into the bracket keep plates then screw fixed to the wall / partition. ***See page 9.7*** ***Fig. 9.12.***

NOTE 1: The frame partition thickness should be the wall partition thickness + 2mm to accommodate the fixing brackets that are surface fixed to the wall / partition.

NOTE 2: The architrave (casements) must be profiled to avoid conflict with the fixing brackets. See page 9.5 Fig.9.6

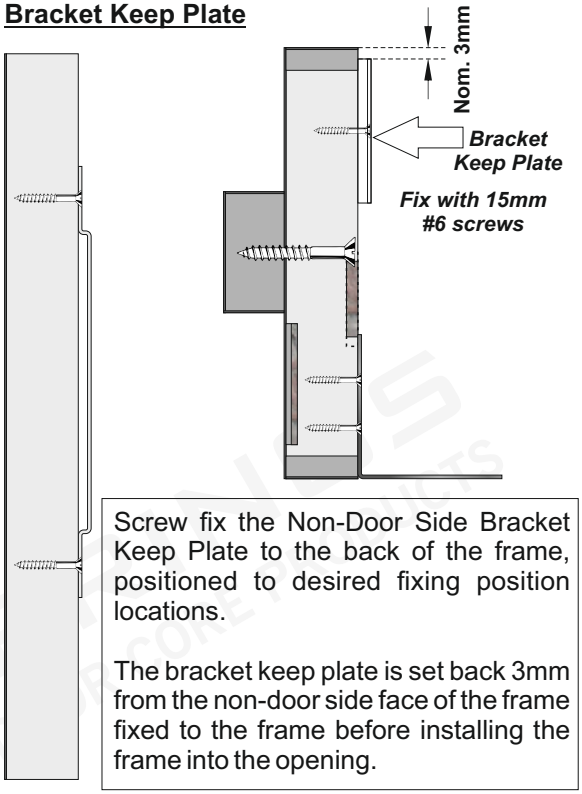
WSCP Bracket Installation System - Bracket Locations:

Door Side Bracket Keep Plate *Fig. 9.9*



Screw fix the Door Side Fixing Brackets to the back of the frame, positioned to suit pre determined fixing position locations.

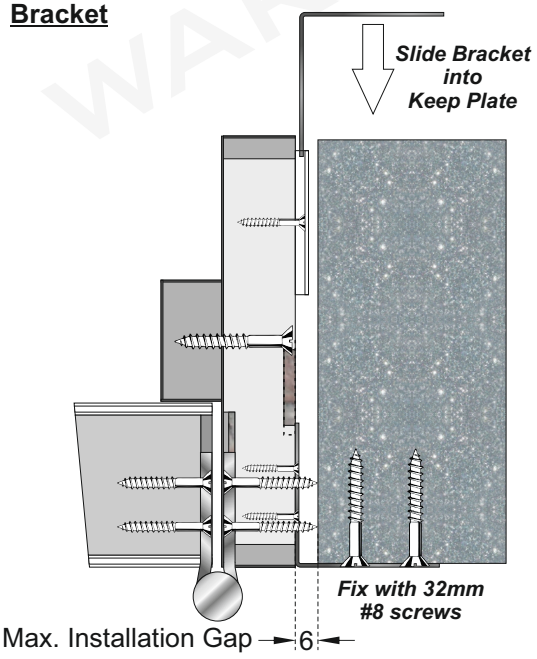
Non-Door Side Bracket Keep Plate *Fig. 9.10*



Screw fix the Non-Door Side Bracket Keep Plate to the back of the frame, positioned to desired fixing position locations.

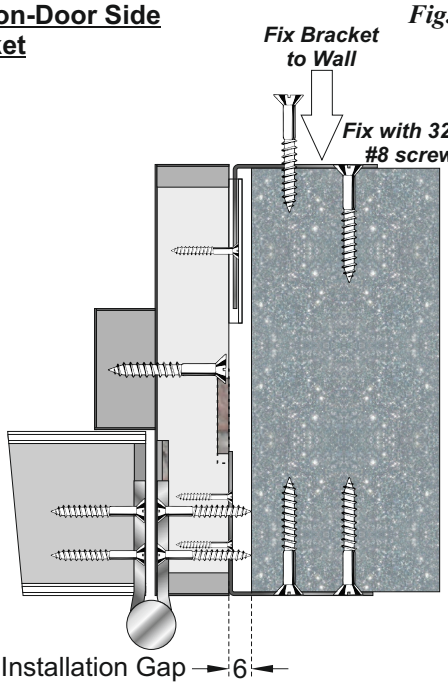
The bracket keep plate is set back 3mm from the non-door side face of the frame fixed to the frame before installing the frame into the opening.

Locate Non-Door Side Bracket *Fig. 9.11*



When the door side bracket has been fixed, slide the non-door side fixing bracket into the bracket keep plate.

Fix Non-Door Side Bracket *Fig. 9.12*



Secure the non-door side fixing bracket by screw fixing into the wall / partition.

WSCP Patented Clip Fixing Installation Guidance:

It is anticipated that the door assemblies will be installed into the building by a competent tradesman. The following provides for general guidance only:

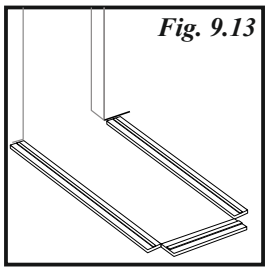


Fig. 9.13

STEP 1: Measure the rough opening size and cut the frame jambs (*legs*) and head to the required lengths related to the size of the door leaf to be installed. ***Fig. 9.13***

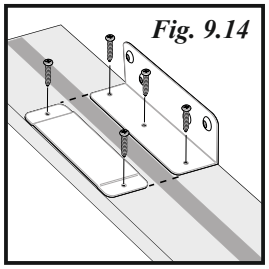


Fig. 9.14

STEP 2: Provide pilot holes and attach the 127mm (*5in.*) angle clips to the hinge side of the jamb (*leg*) using #6 19mm (*3/4in.*) flat head wood screws. The clips should be attached directly behind each hinge point, parallel to the intumescent strip, with the right angle of the clip flush with the edge of the frame jamb (*leg*).

Attach receiver clips in the same manner to the non-door side of the jamb (*leg*), just opposite the angle clip. ***Fig. 9.14***

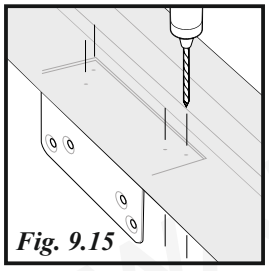


Fig. 9.15

STEP 3: The hinges can be attached when the all the clips have been secured. Pre-drill screw holes to penetrate the metal clips on the opposite side of the frame jambs (*legs*). Fit hinges using #12 32mm (*1 1/4in.*) screws. ***Fig. 9.15***

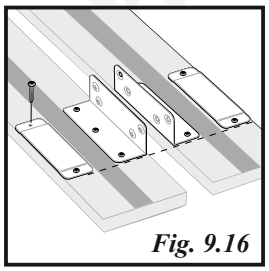


Fig. 9.16

STEP 4: Repeat Steps 2 & 3 on the latch side frame jamb (*leg*) taking care to avoid conflicts with strike plates or other hardware. ***Fig. 9.16***

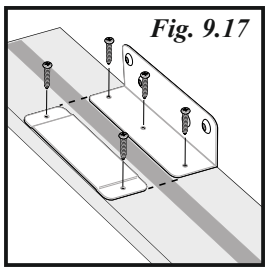


Fig. 9.17

STEP 5: Attach clips to the frame head (*header*) in a similar manner. ***Fig. 9.17***

NOTE: If the frame head (header) is 914mm (36in.) or shorter, only one set of clips is required - located centrally in width. For frame heads (headers) in excess of 914mm (36in.) use two sets of clips located equi-distant between the clips and the ends of the frame head (header). The frame should be located central in the width of the opening with adequate clearance but not exceed 12mm (1/2 in.) between the back of the frame and the surrounding structure.

WSCP Patented Clip Fixing Installation Guidance contd.:

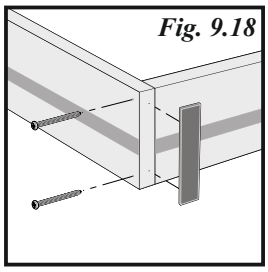


Fig. 9.18

STEP 6: Using #8 50mm (*2in.*) wood screws, secure the frame head (*header*) to the jambs (*legs*) so that the ends of the head (*header*) are flush with the outside edges of the frame jambs (*legs*). Using pilot holes fix with two screws on each end. Attach the supplied self adhesive (*sticky back*) intumescent strip to the end of the frame head (*header*). ***Fig. 9.18***

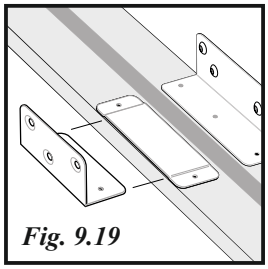


Fig. 9.19

STEP 7: Slide the loose 76mm (*3 in*.) angle clips into the receiver clips on both frame jambs (*legs*) at the head (*header*). ***Fig. 9.19***

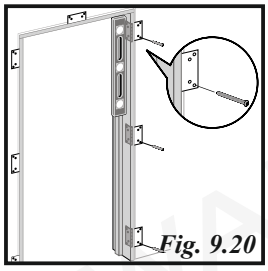


Fig. 9.20

STEP 8: When the frame has been completely assembled, remove the 76mm (*3 in*.) angle clips from the receiver clips. Position the frame into the location opening such that the 127mm (*5 in.*) angle clips are flush with the wall.

When the frame has been positioned in the opening, adjust the hinge jamb (*leg*) so that it is plumb. Always use the hinge jamb (*leg*) as the installation template. Check and adjust as necessary to ensure that the jamb (*leg*) is plumb at each bracket, use a single 50mm (*2 in.*) flat head wood screw to hold the jamb (*leg*) in position before moving on to the next bracket. ***Fig. 9.20***

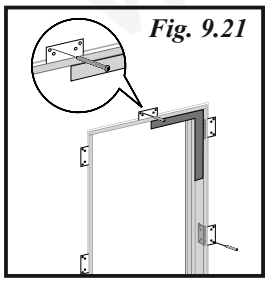


Fig. 9.21

STEP 9: Secure the frame head (*header*) in the same manner, ensuring that the head (*header*) is level and perpendicular to the hinge jamb (*leg*). ***Fig. 9.21***

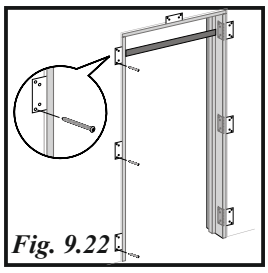


Fig. 9.22

STEP 10: Plumb the closing jamb (*leg*) - *or other jamb (leg) if a pair* - using a spacer bar that has been cut to the exact length of the opening at the top of the frame, which allows for proper door operation. Use the same spacer bar to locate and secure each angle clip on the latch jamb (*leg*) side - *or other jamb (leg) if a pair*. ***Fig. 9.22***

WSCP Patented Clip Fixing Installation Guidance contd.:

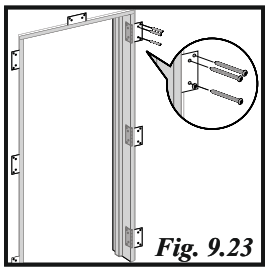


Fig. 9.23

STEP 11: Once the frame has been correctly positioned and is square in the opening, secure with screws in all remaining screw holes of the door leaf side angle clips. ***Fig. 9.23***

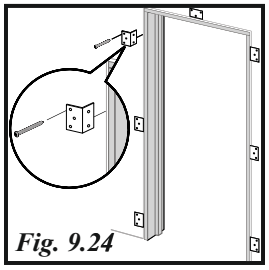


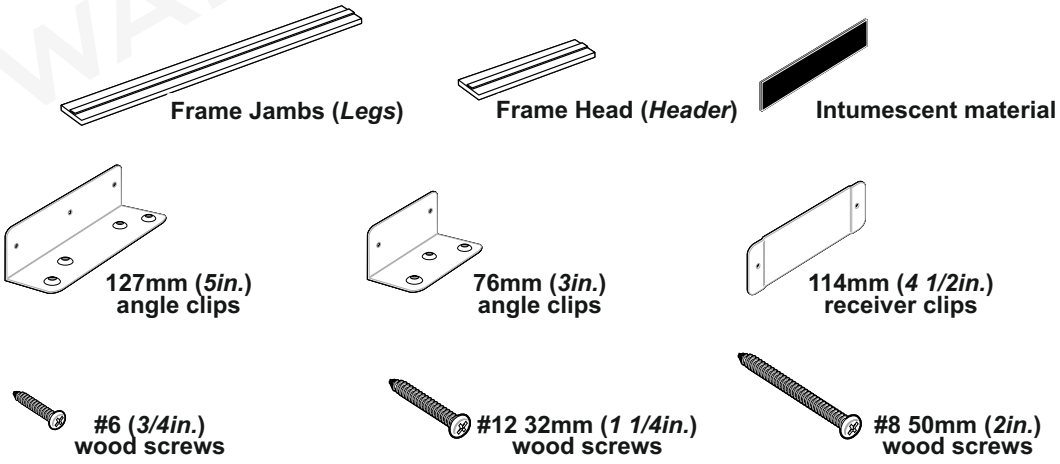
Fig. 9.24

STEP 12: When the frame has been secured to the wall in the door leaf side, insert the 76mm (*3 in.*) angle clips to the receiver clips on the non-door side of the frame. When the clips are flush to the wall, secure them by using 50mm (*2in.*) flat headed screws. ***Fig. 9.24***

The door can now be hung in the frame and the fixing brackets covered by the use of architrave (*casings*). When the installation has been completed there will be no visible fixings (*fasteners*).

WSCP Patented Clip Fixing Components:

Fig. 9.25



WSCP FRX Frame Installation System*: To view a video showing door assembly installation using the unique WSCP clip system click here:*

WSCP Traditional Shim Fixing Installation Guidance:

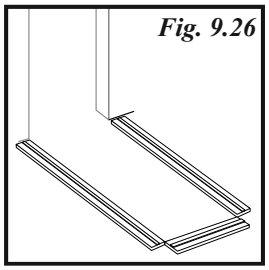


Fig. 9.26

It is anticipated that the door assemblies will be installed into the building by a competent tradesman. The following provides for general guidance only:

Measure the rough opening size and cut the frame jambs (*legs*) and head to the required lengths related to the size of the door leaf to be installed. ***Fig. 9.26***

Using 50mm (2in.) #8 wood screws, secure the frame head to the jambs (*legs*) ensuring that the ends of the head are flush with the outside edges of the jambs (*legs*). Drill pilot holes and screw fix the head to the jambs (*legs*). ***Fig. 9.27***

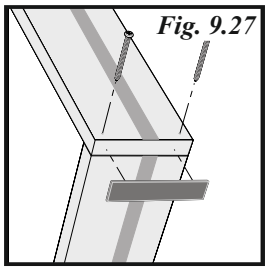


Fig. 9.27

Apply the self adhesive intumescent pads to both ends of the frame head.
NOTE: This provides for a continuous intumescent link between the strips in the back of the jambs (legs) and the frame head. Fig. 9.27

Position the assembled frame into the opening ensuring that the hinge positions suit the intended operation / swing of the door.

The frame should be located central in the width of the opening with adequate clearance but not exceed 12mm (*1/2in.*) between the back of the frame and the surrounding structure. ***Fig. 9.28***

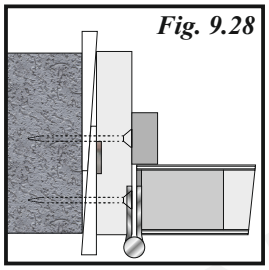


Fig. 9.28

Ensure that the frame is located plumb and square into the opening then fix the hanging jamb (*leg*) first using fasteners of a type and length to suit the surrounding structure. Generally a 75mm (*3in.*) #8 screws would be suitable. The hanging jamb (*leg*) fixings are worked against wedges / shims with adjustments as necessary to ensure that the hanging jamb (*leg*) is securely fixed and remains plumb. ***Fig. 9.28***
NOTE: The installation fastener may be used with rawl plugs (or the like) where necessary but in any event the fasteners should penetrate the surrounding structure to a minimum depth of 50mm (2in.).

For assembly heights up to 2100mm (*7ft.*) a minimum of 4No. fixings per jamb should be used with an additional fixing for each 500mm (*18in.*) in height. ***Fig. 9.29***

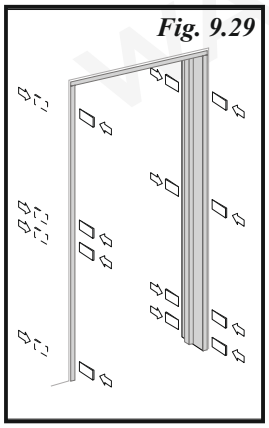


Fig. 9.29

The top fixing should be located to align with the top hinge position with a bottom fixing between 100 ~ 150mm (*4~6in*) from the bottom of the frame jamb (*leg*). Intermediate fixings should generally be located to suit the hinge and other hardware positions.

When the hanging jamb (*leg*) has been fixed, repeat the installation procedure for the closing jamb (*leg*) with the position adjusted to ensure alignment and that the jamb (*leg*) is plumb.
NOTE 1: The door leaf can be hung and used as a template to ensure the correct operation of the door before final tightening of the jamb (leg) fixings.

NOTE 2: For pairs of doors the installation contractor can elect which jamb (leg) is to be fixed first, otherwise the process is the same.

NOTE 3: For door widths in excess of 1000mm (3ft. 6in.) the use of an additional fixing centre width at the head of the frame is recommended.

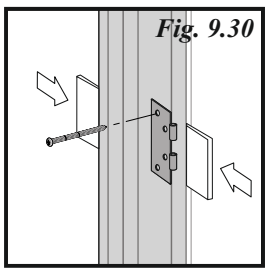


Fig. 9.30

If door stops are fitted to the frame by back screwing before installation, it is recommended that planning is carried out in advance to determine the installation screw fixing positions. 1No. screw position for each hinge can be replaced with a larger installation fixing with a similar action carried out using fixing positions for strike plates (*or the like*). Otherwise, these can sometimes be located such there the positions would be covered by weather strip gaskets. The use of pellets could also be considered. ***Figs. 9.28 & 9.30***

If the door stop is fitted following the installation of the frame lining, the door stop can be used to cover the installation fixings. ***Figs. 9.28***

Section 10: Thermal-Lite & WSCP-412 Doors - Hardware

Section 10 identifies common hardware used with fire rated door assemblies and provides for general guidance.

- Selected hardware must be fire rated for use with wood doors up to or above the fire rating required for the particular application.
- Preparation to receive hardware must be carried out in accordance with NFPA 80 and the hardware manufacturers' installation instructions / templates.
- Hardware not listed in this section must be approved (*in writing*) by Intertek Testing Services.
- Surface mounted hardware shall be installed using through bolts unless Tectonite blocking is used in the door construction to receive screw fixings.

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS - *See separate listing Sections 12 and 16.*

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Hinges:

Hinges must generally comply with NFPA 80, Table 6.4.3.1.

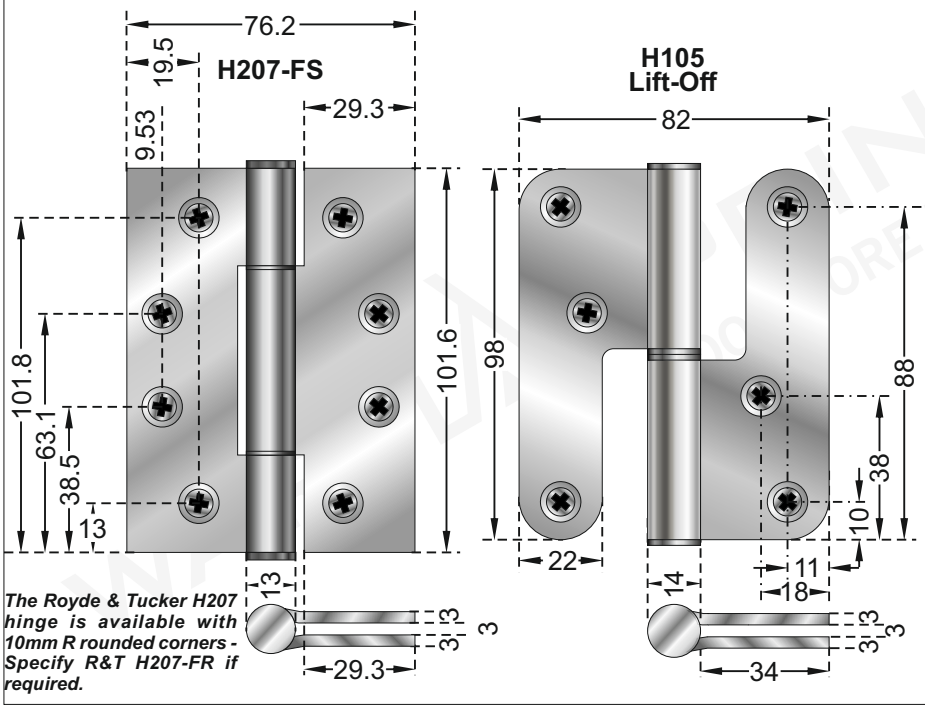
Use of Listed and labelled pivot and continuous hinges is permitted.

Minimum approved hinge size = 100 x 76mm (as tested), otherwise hinge sizes to be NFPA 80 compliant.

WSCP have carried out fire testing to meet all performance requirements defined in this manual using Royde & Tucker H207 & H105 Hi-Load hinges located as detailed below.

Royde & Tucker H207 & H105 Hi-Load hinges

Fig. 10.1



The Royde & Tucker H207 hinge is available with 10mm R rounded corners - Specify R&T H207-FR if required.

H207 Applications

Minimum door thickness = 35mm

Maximum Adjusted door weight (*3 hinges*) = 120kgs.

H105 Lift-Off Applications

Minimum door thickness = 35mm

Maximum Adjusted door weight (*3 hinges*) = 80kgs.

Adjusted door weights:

= Actual door weight plus or minus:

Used with door closer Add 20%

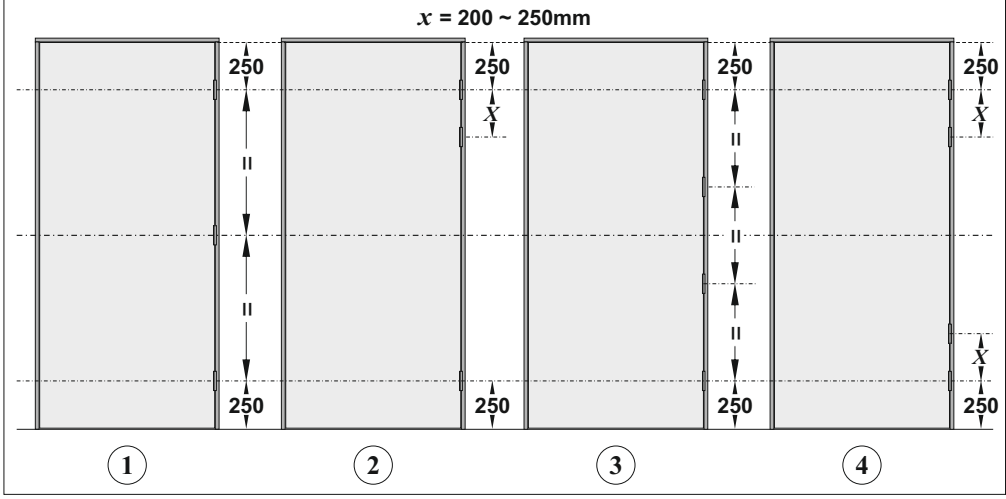
Used with door closer with backcheck facility Add 75%

Extra heavy duty door use. Add 10%

Light door use. Deduct 10%

Recommended Hinge Locations

Fig. 10.2



Maximum resistance to door distortion use Locations 1 or 3

Maximum load carrying ability use Locations 2 or 4

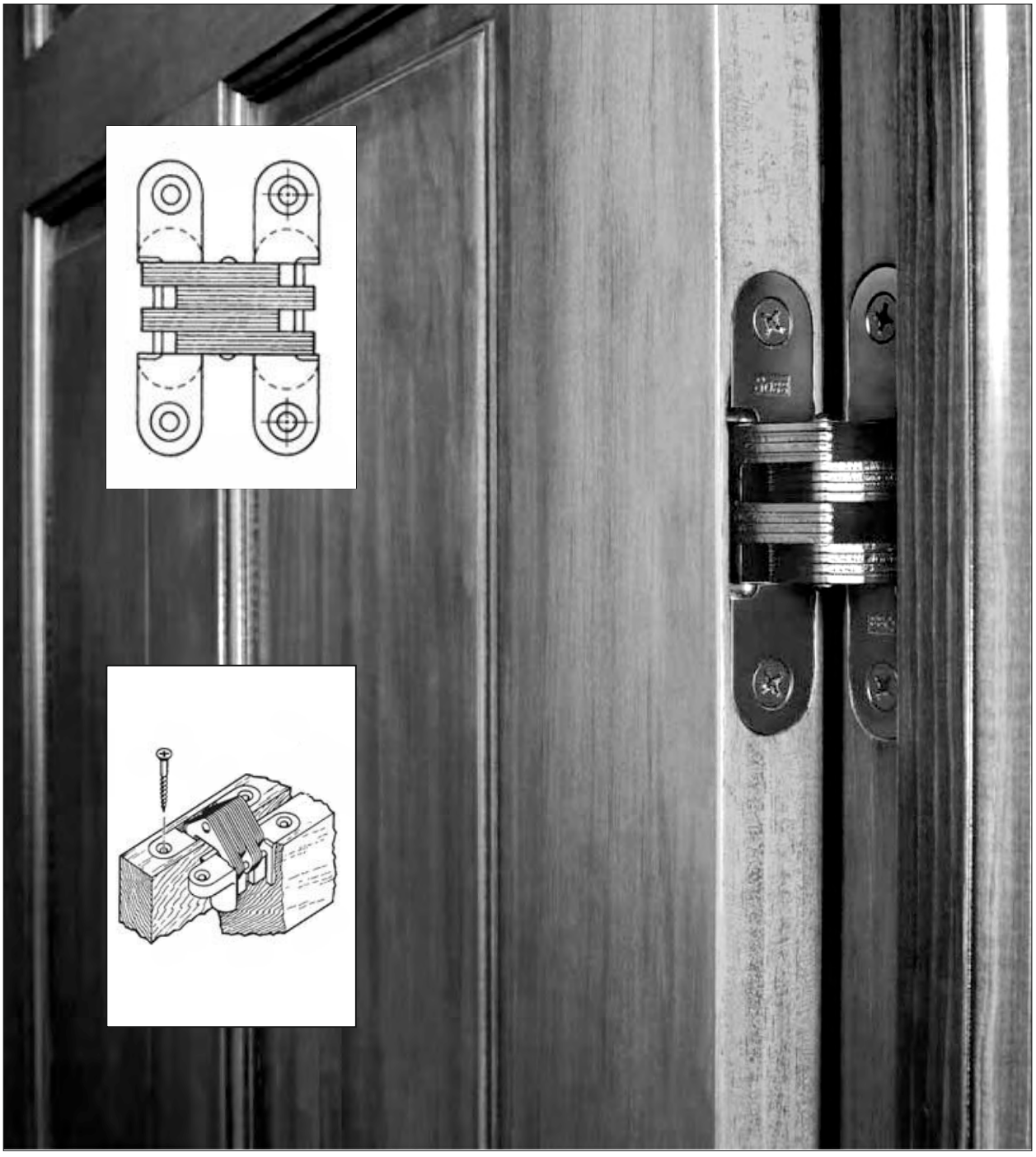
For door leaves over 2100mm high use Locations 3 or 4

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Hinges contd.:

Series 418 SOSS concealed hinges are approved for use with WSCP door constructions.

Other concealed hinges that are NFPA 80 compliant for use with mineral core door constructions may also be considered.



THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

WARM SPRINGS
COMPOSITE PRODUCTS

PO Box 906, Warm Springs, Oregon 97761 (541) 553-1143

SOSS Hinges

Approval Specifications

Description

SOSS hinges are hinges that are mortised into both the door stile and frame leg. Series 418 SOSS hinges are covered by this approval. All hinges must be compliant with NFPA 80 for use in fire door applications.

Specifications

Hinge Size	4.625" x 1.125" x 1.5935" (117.475 mm x 28.575 mm x 40.4749 mm)
Mortise Width	1.125" (28.575 mm)
Mortise Height	2.4375" (61.9125 mm)
Mortise Depth	1.65625" (42.06875 mm)
ITS Report Number	100618964COQ-005 3/2/2012
Frame Thickness Minimum	2.0" (50.8 mm)
Hinge Stile Thickness Minimum	2.0" (50.8 mm)

Products Evaluated

Warm Springs Frames & Doors	20 Minute to 90 Minute
Door Type	Singles and Pairs
Core Types	Refer to ITS construction approvals
Fire Approvals	UL 10(c) (2009) - Positive Pressure

Approval Agency

Intertek Testing Services - 8431 Murphy Drive, Middleton, WI 53562
Attached extractions from test report have been redacted for confidential business information.

Machining

Machined to hinge manufacturer specifications

Availability

Door and Frame Components from Warm Springs Composites

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Latchsets:

Minimum latch bolt throw = 12mm

Cylindrical: Maximum bore = 54mm - Maximum backset = 127mm.

Mortise: Maximum cutout = 27mm wide x 120mm deep x 171mm long. Machining depth of mortise body must not exceed the lock dimension by more than 3mm.

Latch Configurations:

Double leaf door assemblies (*pairs*) require three or four point latching. ***See Section 3 pages 3.4 ~ 3.8.***

Fire Exit Devices:

(*CVR*) Concealed vertical rod and CVR-LBR Concealed vertical rod / Less bottom rod, Surface mounted vertical rod, Rim type and Mortise Rim Type devices are approved subject to the following:

- All stiles fitted with CVR or CVR-LBR hardware must be min. 127mm wide and constructed using Warm Springs Tectonite material. ***See Section 5 Pages 5.6 & 5.7*** - ***Figs. 5.10 & 5.11.***

- For double leaf door assemblies (*pairs*) using CVR or CVR-LBR hardware - minimum 96mm Tectonite top and bottom rails are required. ***See Section 5 Pages 5.6 & 5.7*** - ***Figs. 5.10 & 5.11.***

NOTE 1: Positive pressure fire performances up to 90mins. can be achieved using the Adams Rite 3900/8900 Concealed Rod Exit Device - See pages 10.9 & 10.10 for further guidance.

NOTE 2: All other Listed/Labelled CVR or CVR-LBR systems are limited for use with WSCP door constructions for fire performances up to 60min.

NOTE 3: Preparation to receive CVR or CVR-LBR devices must not exceed the maximum cut out restrictions for the door construction or the particular device, whichever is the lesser.

Deadlocks:

The use of listed mortised or cylindrical deadbolts is permitted subject to the following:

- The minimum approved distance between the cutout for the deadlock and another hardware cutout (*hardware, louvre (louver) or vision panel*) is:
  90minute fire performance = 127mm
  Up to 60 minute fire performance = 50mm

- Maximum approved cylindrical deadlock cutout = 54mm diameter bore.

- The minimum approved distance between the cylindrical bore and another cutout (*hardware, louvre (louver) or vision panel*) = 98mm.

- Maximum approved backset = 69mm.

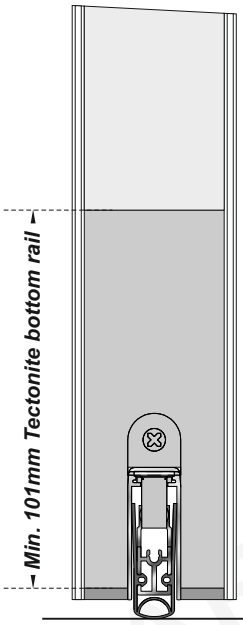
- Interconnecting Locks: Locks consisting of a combination cylindrical latch and cylindrical deadlock are approved provided both cylindrical holes are covered by a common face plate on one or both sides of the door.

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Bolts:

The use of listed Surface mounted manual, automatic flush bolts or manual flush bolts is approved.

Norsound NOR810 Automatic Drop Seal *Fig. 10.3*



Door Bottoms:

The use of listed / labelled mortised or surface mounted door bottoms is approved.

- *The Norsound NOR810 Automatic Drop Seal has been independently tested for use with WSCP fire rated door assemblies and may be used for all approved fire performance applications when used with a min. 101mm high Tectonite bottom rail.*

Closing Devices:

The use of surface mounted closers is approved when installed with bolt through fixings.

NOTE: Surface mounted closers may be fitted using screw fixings provided that the door construction includes additional Tectonite blockings located to suit the closer fixing positions.

The use of listed concealed track and arm closers is approved for fire performances up to 60 mins. subject to the following:

- Maximum cutout dimensions to receive closer fittings = 580mm long x 33.5mm wide x 35mm deep.
- The door must be constructed using a min. 101mm Tectonite top rail.
- The closer device body must be installed in a Listed/Labelled Steel Frame approved for that application.

Viewers:

The use of listed viewers is approved subject to the following:

- Preparation to receive viewers up to 25mm diameter may be completed on site (*in the field*).
- The use of multiple viewers is permitted.

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Protection Plates:

Protection plates may be fitted to WSCP doors subject to the following:

- The maximum approved height for the protection plate is 406mm.
- Protection plates may be to the full width of the door.
- Protection plates must be applied to the bottom edge of the door.
- Brass, Bronze, Steel or Aluminium (*aluminum*) plates may be used by reference to NFPA 80.
- Protection plates may be fixed with mechanical fasteners or fully adhered using contact adhesives.
- Other listed protection plates may be used provided that these are installed in accordance with the manufacturers' installation instructions.
- Plates may be installed to one or both faces of the door.

Vision Panels: ***See Section 5 Pages 5.8 ~ 5.10 - Figs 5.12 ~ 5.14.***

Louvres (*louvers*):

The use of louvres (*louvers*) is approved subject to the following:

- The Louvre (*louver*) must be listed and labelled.
- The louvre (*louver*) area shall not exceed 0.34$m^{2.}$
- The top edge of the louvre (*louver*) cutout must be located at not more than 1016mm from the bottom edge of the door.

Wire ways (*Raceways*):

A maximum 9.5mm groove can be formed centre (*center*) thickness of the door core to form conduit to link an Electrical Power Transfer (*EPT*) fitted to the hanging stile to an electrically operated latch at the closing stile.

The wire way (*raceway*) is formed in the core prior to the assembly of the door and before the door facings are applied. ***See Section 5 Page 5.2 - Fig. 5.4.***

A 6mm dia. hole may be drilled through the hanging and closing stiles to align with the 9.5 x 9.5mm groove.

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Metal Edges / Astragals: ***See Section 5 - Page 5.3 -*** *Fig. 5.6*

When specified, Min, 18 gauge (US) metal edges and / or astragals shall be used by reference to NFPA 80.

Edge guards must overlap the face of the door by a minimum 25mm. and attached using Nom. 19mm #8 threaded wood screws located a minimum of 50mm from each end with intermediate fixings at not more than 300mm centres.

Electrical Power Transfer EPT Units:

The use of EPT units is approved subject to the following:

- EPT units are limited for use with max. 60 minute positive and neutral pressure fire door applications.
- These are to be located between the top and middle hinge.
- A maximum of 1.6mm clearance (per side) is allowed when mortising into the Tectonite stile to receive the EPT unit.
- The EPT unit must be located to coordinate with the wire way (*raceway*). ***See Page 10.6.***
- A minimum 51mm Tectonite Stile is required to accept the EPT cutout. Actual stile size will depend on cutout depth required.

Fig. 10.4

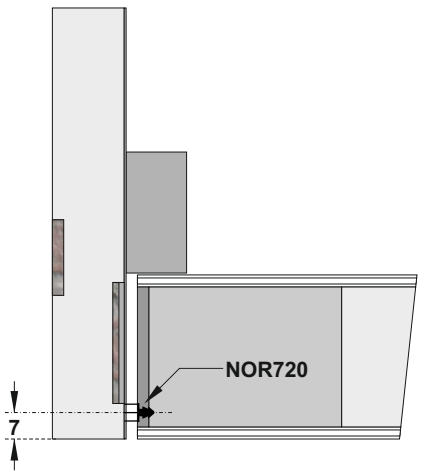
Typical EPT Unit

Edge Guards: ***See Section 5 - Page 5.4 -*** *Fig. 5.7*

The use of surface mounted edge guards is permitted for neutral pressure applications only. Approved materials include steel, stainless steel and Acrovyn.

Norsound NOR720 Door Edge Gasket

Fig. 10.5



Gasketing:

All Listed fire rated gasketing may be used.

- *The Norsound NOR720 perimeter kerf-fit seal applied to the door edges has been independently tested by WSCP and approved for use with WSCP fire rated door assembly designs.*

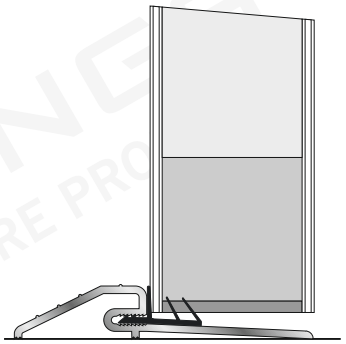
THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Thresholds:

All Listed fire rated threshold plates may be used.

- *The Norsound NOR650 stepped threshold plate with seal has been independently tested by WSCP and approved for use with all WSCP door fire rated door assembly designs.*

Norsound NOR650 Stepped Threshold with seal *Fig. 10.6*



Applied Mouldings: ***See Section 5 - Page 5.4 -*** *Fig.5.8*

Bevelling (Leading Edge): ***See Section 5 - Page 5.3 -*** *Fig.5.5*

See also Appendix. 'A' - Door growth calculation - to determine bevel required to ensure that the door will clear the frame (or the adjacent door - if a pair) during its operation.

Face grooving: ***See Section 5 - Page 5.5 -*** *Fig.5.9*
NOTE Limited to fire performances up to 45 minutes.

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

LCN 2010 & 2030 Concealed Closers:

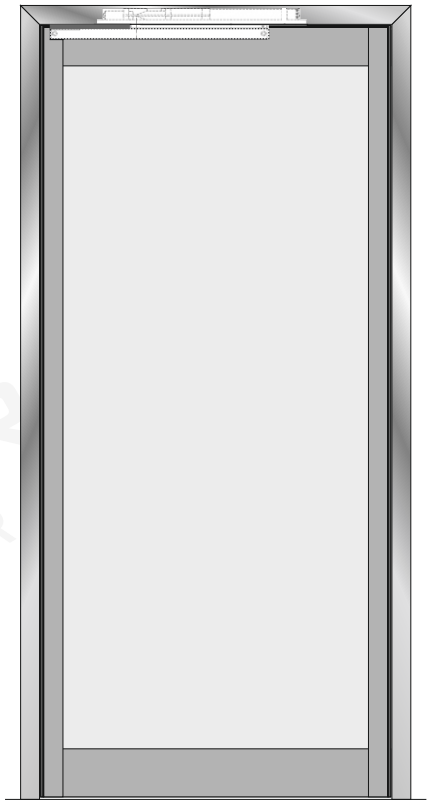
WSCP 60min. Category 'A' door constructions have been tested in a steel frame by reference to Intertek Test Report No. 102576295COQ-003B June 2016.

Track and pivot arms for use with LCN 2010 or 2030 Concealed Closers may be fitted to WSCP Category 'A' door constructions for fire door applications up to 60minutes in single leaf, single swing configurations.

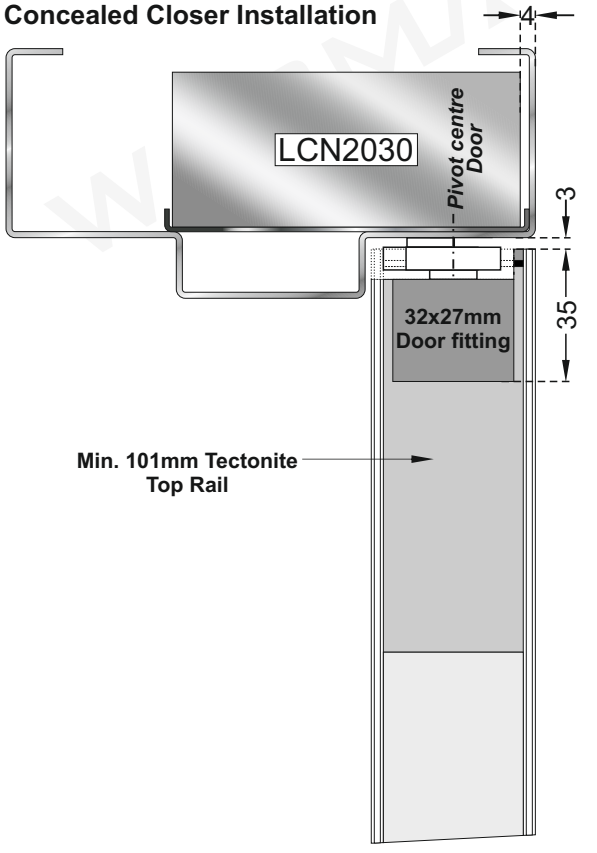
The door leaf must comply with details described by reference to *Sections 3 & 4* for WSCP Category 'A' constructions for minimum 60min. applications but with the Tectonite top rail increased to a min. 101mm.

The door leaf must be used with a Listed steel frame providing for a minimum 60min. performance with dimensional limits determined by reference to the steel frame manufacturers data or the maximum approved dimensions for this door construction, (*See Sections 3 & 4*) - whichever is the lesser.

LCN 2010 & 2030 Concealed Closer Location *Fig. 10.7*



LCN 2010 & 2030 Concealed Closer Installation *Fig. 10.8*



NOTE: Machining to receive, and installation of LCN 2010 or 2030 Concealed Closer track and pivot arm must be carried out strictly in accordance with the Manufacturers Installation Instructions.

THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

LCN 2030 Concealed Closer Details

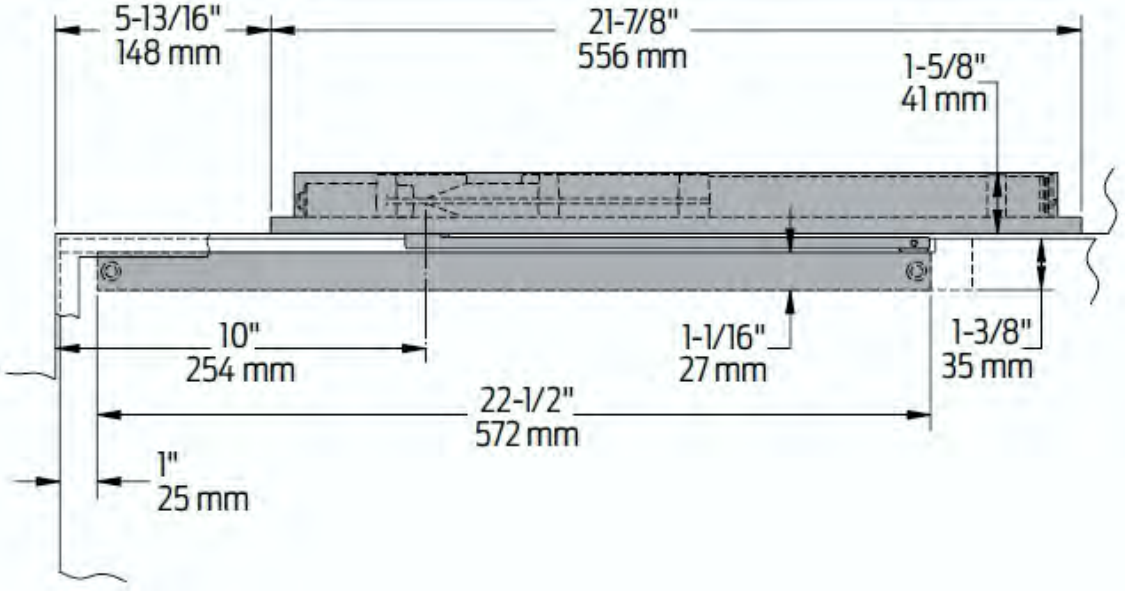
LCN 2030 Concealed Closer

Fig. 10.9

The concealed 2030 Series PACER® is a heavy duty closer.
The single lever arm and roller assembly provide smooth, quiet door control with a choice of finishes and track functions to meet a wide range of architectural requirements.

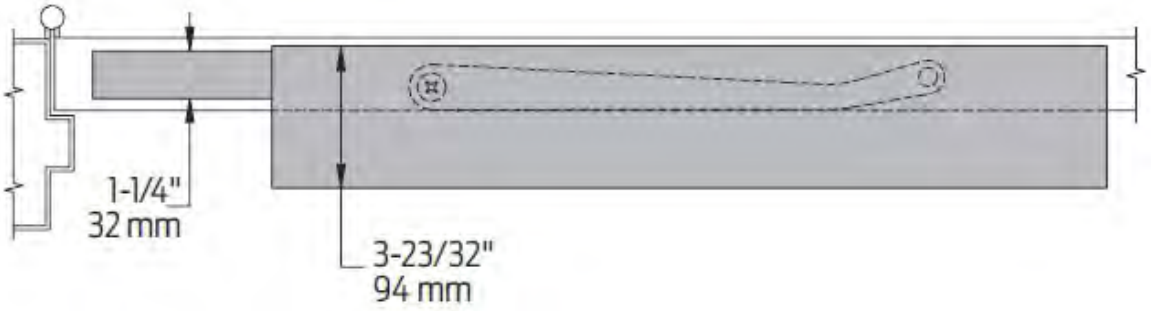
LCN 2030 Concealed Closer - Elevation

Fig. 10.10



LCN 2030 Concealed Closer - Plan

Fig. 10.11



THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Adams Rite 3900/8900 Concealed Rod Exit Device:

WSCP door constructions have been tested with Adams Rite Concealed Vertical Rod Exit Devices by reference to Intertek Testing Services File No: J20024296/C-231 (10/00) March 2001 and are Listed for use for 45 ~ 90min. flush door positive pressure fire door applications to the following maximum dimensions:

Single leaf / single swing assemblies: 1219mm (*4ft.*) wide x 2438mm (*8ft.*) high.
Double leaf / single swing (*pairs*): 2438mm (*8ft.*) o/a wide x 2438mm (*8ft.*) high.
NOTE: The maximum size for any leaf in a pair must not exceed that approved for single leaf door assemblies.

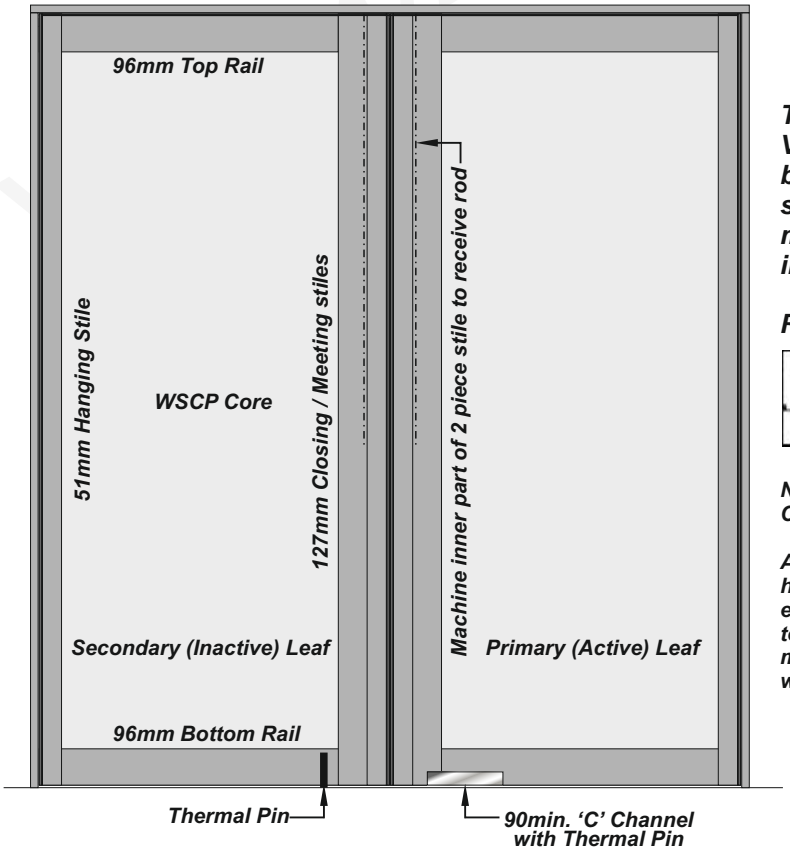
Door leaf constructions must conform with WSCP details with Tectonite stiles and rails as described by reference to *Sections 3 & 4* with the Tectonite door construction framing to conform with the following minimum dimensions:

Hanging stiles = Min. 51mm.
Closing or Meeting stiles = Min. 127mm
Note 1: Closing and meeting stiles are made up in 2 parts. (See Section 5 - Page 5.7 - Fig. 5.11.)
Note 2: The inner stile is machined to form a 12.7x 17.5mm groove to house the CVR operating rods.
Top and Bottom rails: Min. 96mm.

Doors must be hung in a Listed frame suitable for the required performance (*See Section 6*). The maximum approved sizes must be reduced to suit the frame listing requirements if these are less than those stated above.

Adams Rite 3900/8900 Concealed Vertical Rod / Less Bottom Rod Exit Device - Location:

Fig. 10.12



The Adams Rite Concealed Vertical Rod Exit Device must be machined for and installed strictly in accordance with the manufactures installation instructions.

Refer to:

Adams Rite
Adams Rite Manufacturing Co.
10027 S. 51st Street, Suite 102
Phoenix, AZ 85044
Phone: 800-872-3267
www.adamsrite.com
ASSA ABLOY

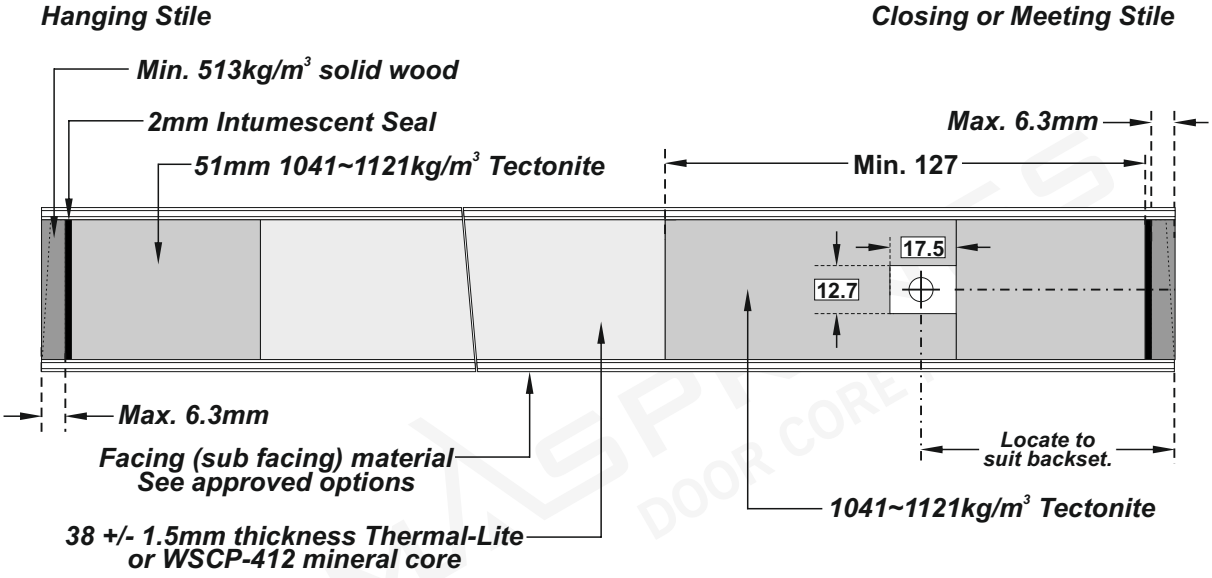
NOTE: This detail illustrates a CVR/LBR application.

A standard CVR application would have both vertical rods running the entire vertical length and attaching top and bottom - the Thermal Pins and metal 'C' Channel can be omitted where full length rods are used.

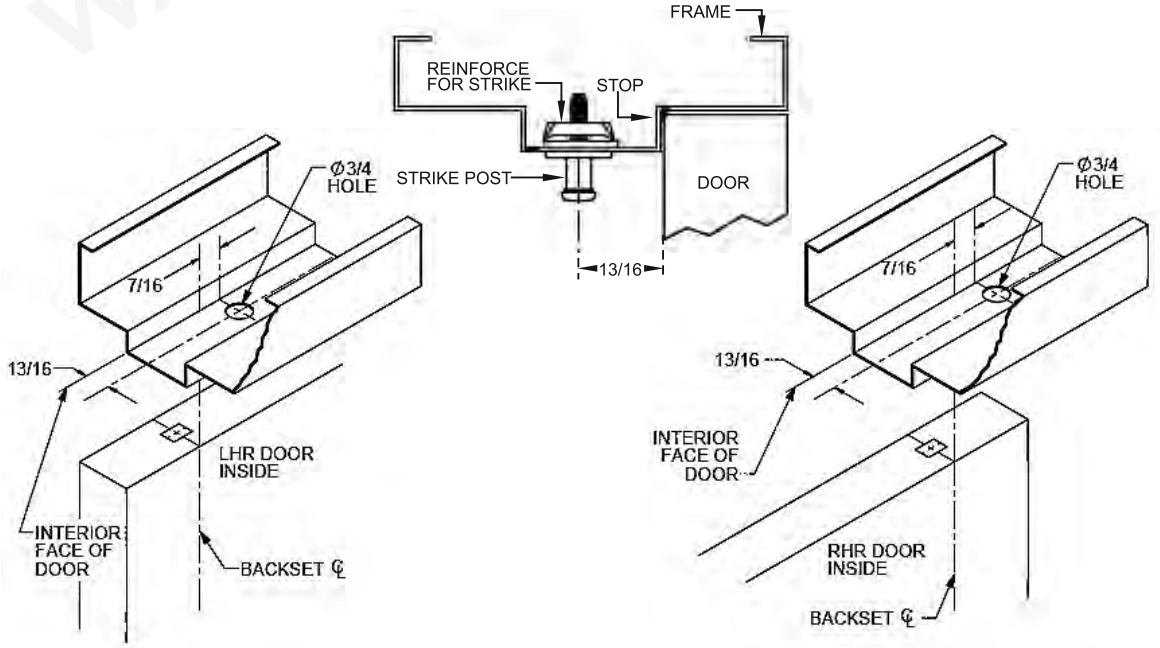
THIS SECTION DOES NOT APPLY TO WSCP PROFILED OR STC DOOR CONSTRUCTIONS
See separate listing Sections 12 and 16.

Adams Rite 3900/8900 Concealed Rod Exit Device:

Adams Rite 3900/8900 Concealed Rod Exit Device: *Fig. 10.13*
Door Construction - Section thro' Width



Adams Rite 3900/8900 Concealed Rod Exit Device: *Fig. 10.14*
Installation



Section 11: Transoms & Side Panels

Section 11

Door assemblies including transom or side panels can be manufactured using WSCP materials.

The overall dimensions of the assembly (*including the transom and side panel*) must not exceed that which is listed and approved for the door / panel design and the frame. ***See Sections 2, 3 & 6.***

Generally transom and side panels are constructed to WSCP Category 'B' specifications with Category 'C' frame designs (***See Section 6*** *WSCP - FRX* ***'B' Series*** *Frames*) to the perimeter of the panels to provide for positive pressure applications, where required.

The panels are to be retained in four sided frames with panels located generally centre of the partition thickness (*within the Tectonite or AntiFire MDF zone of the frame*) and secured using screw fixings as detailed in this Section. In addition, the panels are to be located using beading (*stops*) to both faces to a minimum height of 13mm.

Side panels and transom panels can be glazed where required subject to limitations described in this section.

Additional decorative mouldings can be applied at the junction between the door assembly and the transom and / or side panels if required.

It is recommended that the complete unit is assembled in advance of installation into the site location.

Elevation - Door Assembly with Side Panel and / or Transom Panel - Flush:

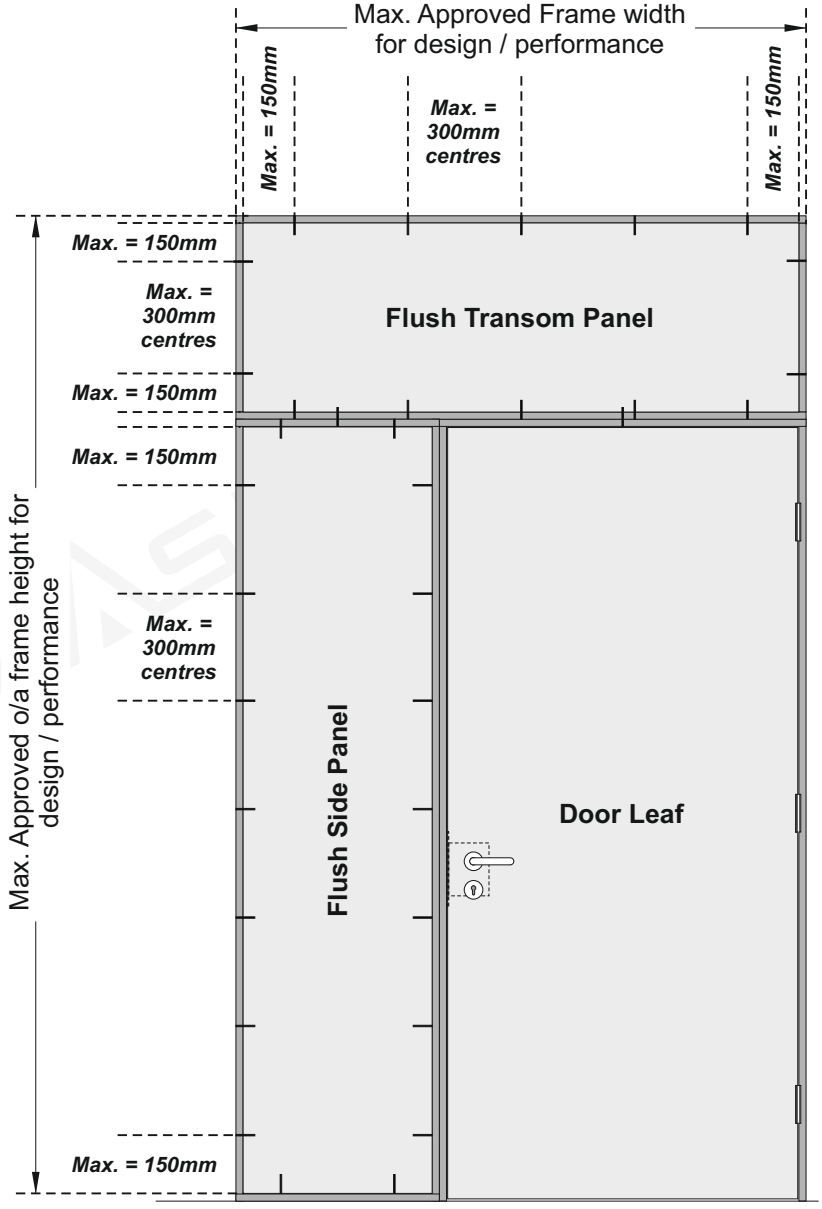
Overall Frame:
The maximum (*total*) overall frame dimensions shall not exceed the height and width dimensions described by reference to ***Section 6*** for the particular frame design.

Door leaf / panel:
The maximum door leaf / panel dimensions shall not exceed the height and width dimensions for the particular construction described by reference to ***Sections 2 & 3*** for the particular door construction.
NOTE: Where door construction designs are approved to different dimensions to those approved for the selected frame, the smaller dimensions shall take precedence.

Side & Transom Panel Fixings:
Side & Transom panels to be secured into an approved and listed frame using min. 50mm (*2in.*) #8 screw with fixings located a maximum of 150mm from each corner and with intermediate fixings located equi-spaced at not more than 300mm centres.

Side & Transom Panel Installation:
The complete unit including the door(s), side panels and transom panels must be constructed to form a complete assembly in advance of installation into the building.
NOTE: The method(s) of installation otherwise to be as described by reference to Section 9.

Door Assembly with Side Panel & Transom Panel - Flush *Fig. 11.1*

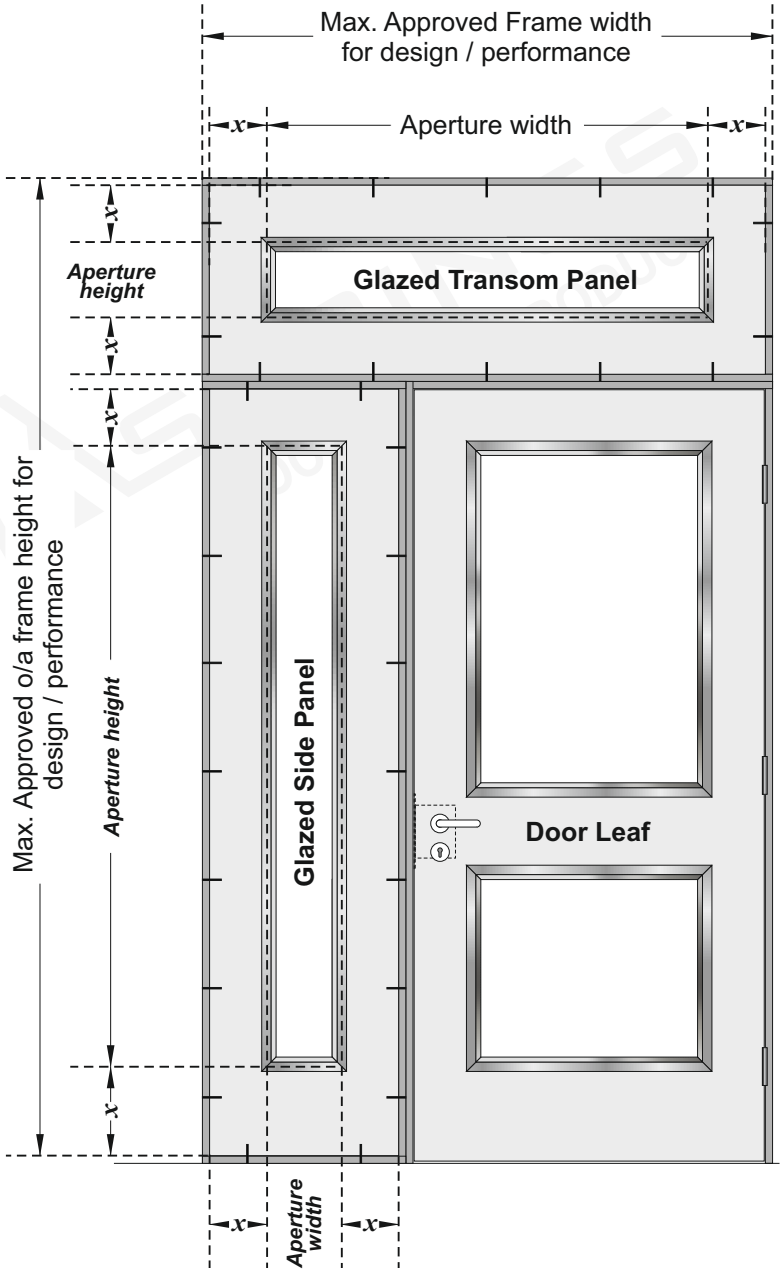


NOTE: See page 11.6 Fig. 11.8 for some possible design applications.

Elevation - Door Assembly with Side Panel & Transom Panel - Glazed:

Door Assembly with Side Panel & Transom Panel - Glazed

Fig. 11.2



Glazed Side & Transom Panels:

Side & Transom panels may be glazed as described for door leaves providing margins are not less than 76mm. Otherwise margins and glazing must not exceed the door construction Listing allowances.

'x' = Minimum margin from the edge of the door to the nearest sight line of the aperture cut in the door to receive the glazed panels.

NOTE 1: The minimum margin for fire rated panels up to 60min. is 76mm.

NOTE 2: For 90min. fire doors the minimum margin is increased to 140mm.

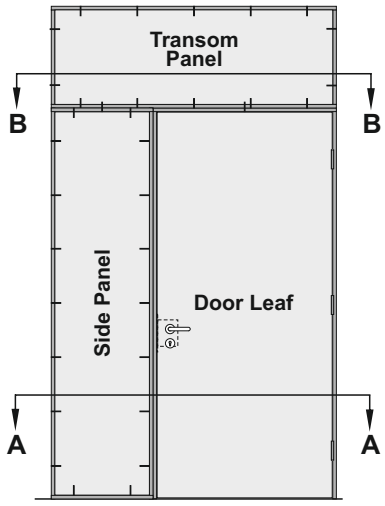
NOTE 3: The margins must be further increased to provide for the same minimum margin dimensions described above from any mortise pocket, machining for hardware or electrical wire ways (raceways).

See Section 5: pages 5.8 & 5.9. for further glazing guidance.

Sections thro' Width Side Panel & Transom Panel:

Sections thro' Width - Door Assembly with Side Panel & Transom Panel

Fig. 11.3



This illustration shows typical sections through width using doors with side panels and / or transom panels.

The actual door / panel and frame construction details may vary according to performance requirements.

The overall assembly width may vary according to selected door constructions and frame details with maximum approved dimensions being 2438 x 2438mm.

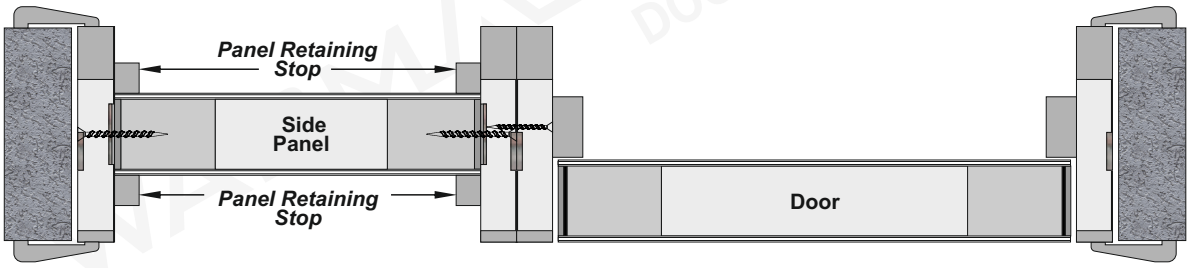
Frames for side panels and transom panels must comply with WSCP Category 'C' - Proprietary Frame details for positive pressure applications. *(**See Section 6** WSCP - FRX '**B**' series frames).*

The panels are to be retained in four sided frames with panels located generally centre of the partition thickness (*within the Tectonite / AntiFire zone of the frame - See Fig.11.7*) and secured using screw fixings as detailed in this Section. In addition, the panels are to be located using beading (*stops*) to both faces to a minimum height of 13mm.

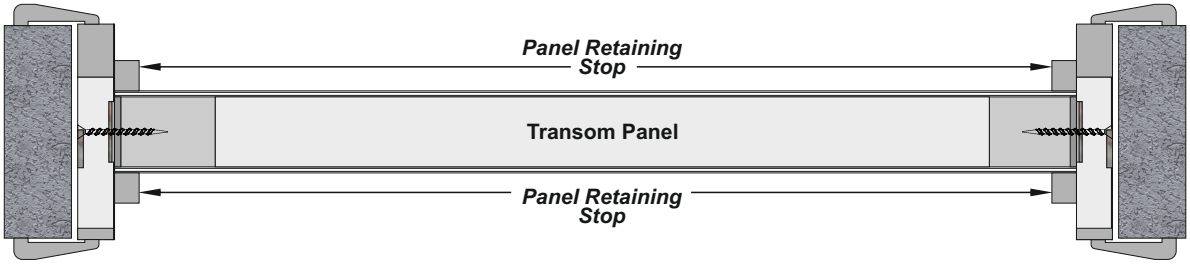
NOTE 1: The edge banding of transom and side panels is optional.

NOTE 2: Intumescent materials and described by reference to Section 6 must be used with WSCP Cat.'C' (WSCP - FRX 'B' series) frames for positive pressure applications with the intumescent material aligned centre thickness of the panels. See Fig. 11.7.

Section A-A



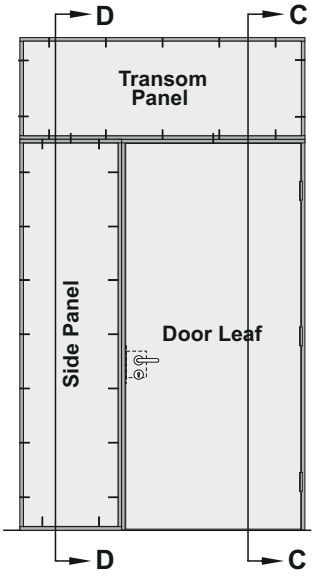
Section B-B

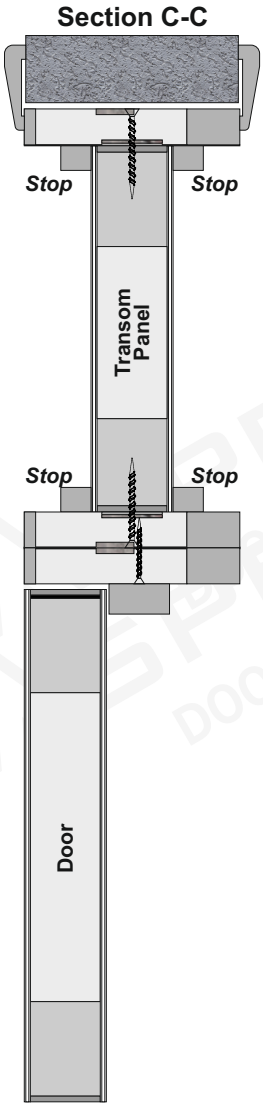


Sections thro' Height Side Panel & Transom Panel:

Sections thro' Height - Door Assembly with Side Panel & Transom Panel

Fig. 11.4

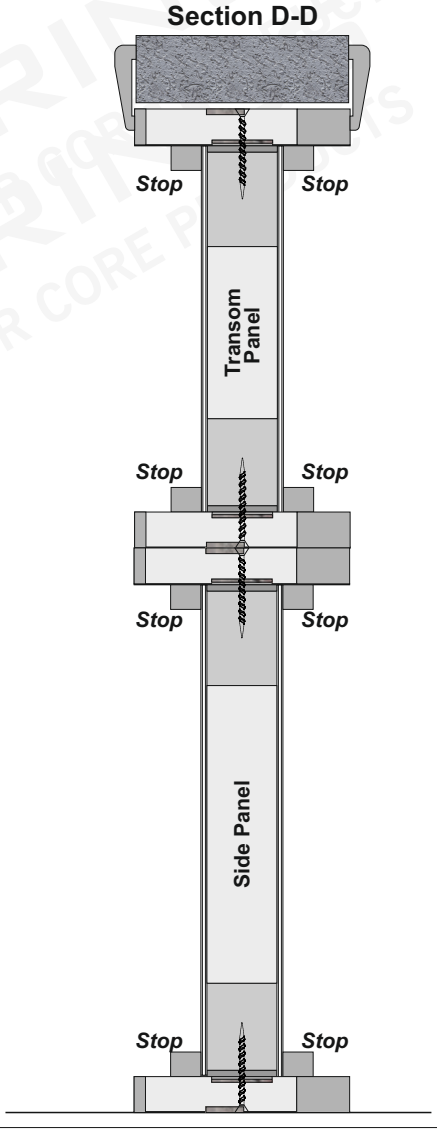




NOTES:

NOTE 1: The edge banding of transom and side panels is optional.

NOTE 2: Intumescent materials and described by reference to Section 6 must be used with WSCP Cat.'C' (WSCP - FRX 'B' series) frames for positive pressure applications with the intumescent material aligned centre thickness of the panels. See Fig. 11.7.



This illustration shows typical sections through height using doors with side panels and / or transom panels.

The actual door / panel and frame construction details may vary according to performance requirements.

The overall assembly height may vary according to selected door constructions and frame details with maximum approved dimensions being 2438 x 2438mm.

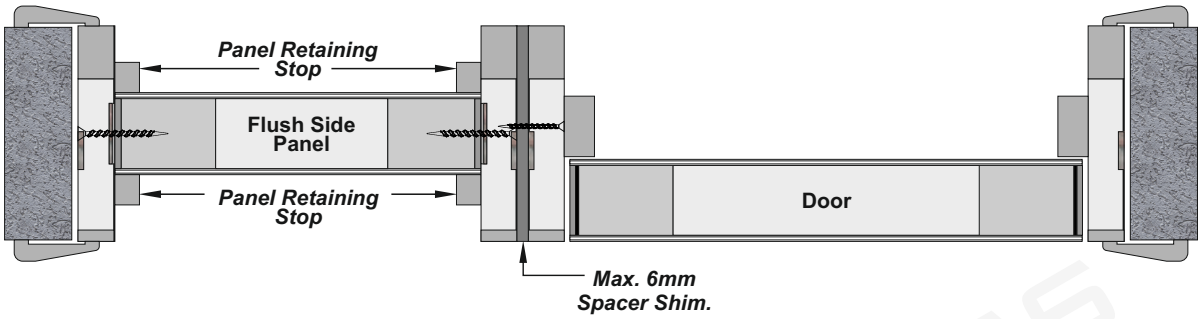
Frames for side panels and transom panels must comply with WSCP Category 'C' - Proprietary Frame details for positive pressure applications. *(**See Section 6** WSCP - FRX '**B' series** frames).*

The panels are to be retained in four sided frames with panels located generally centre of the partition thickness (*within the Tectonite / AntiFire zone of the frame - See Fig. 11.7*) and secured using screw fixings as detailed in this Section. In addition, the panels are to be located using beading (*stops*) to both faces to a minimum height of 13mm.

Approved Variantsl:

Spacer Shims:

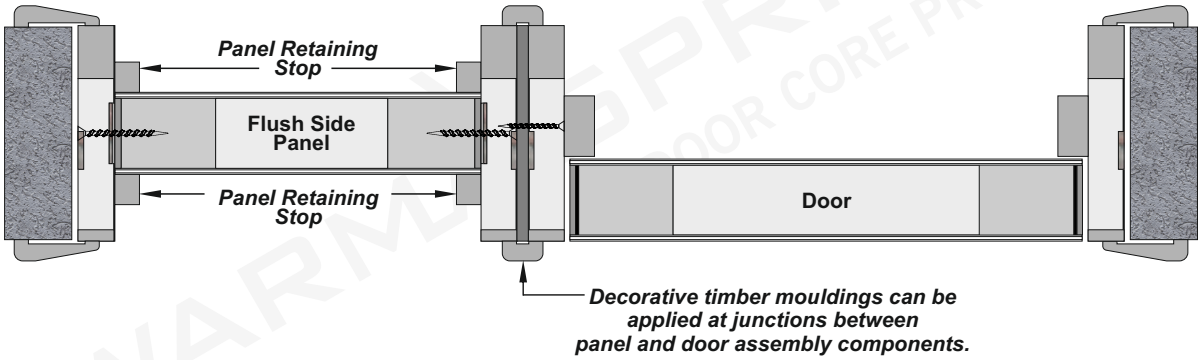
Fig. 11.5



Timber shims up to 6mm thick can be used to separate the frames for all assembly components.

Decorative Mouldings:

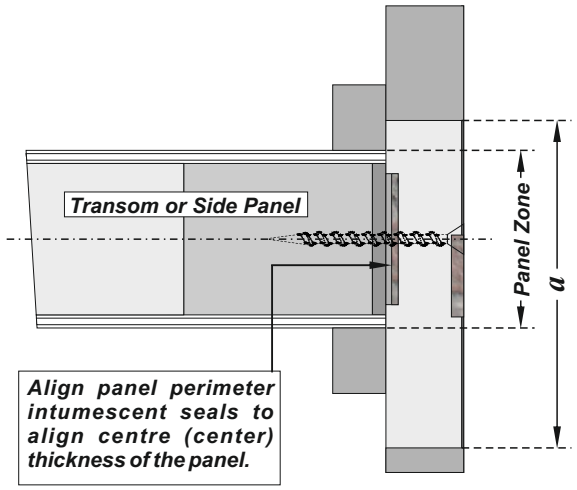
Fig. 11.6



Decorative timber mouldings can be applied at junctions between panel and door assembly components.

Frame Adjustments to suit Transom and Side panels:

Fig. 11.7



The dimension of the Tectonite or AntiFire frame core material (dim. ***'a'***) is adjusted as necessary to ensure that the core material covers the panel thickness zone.

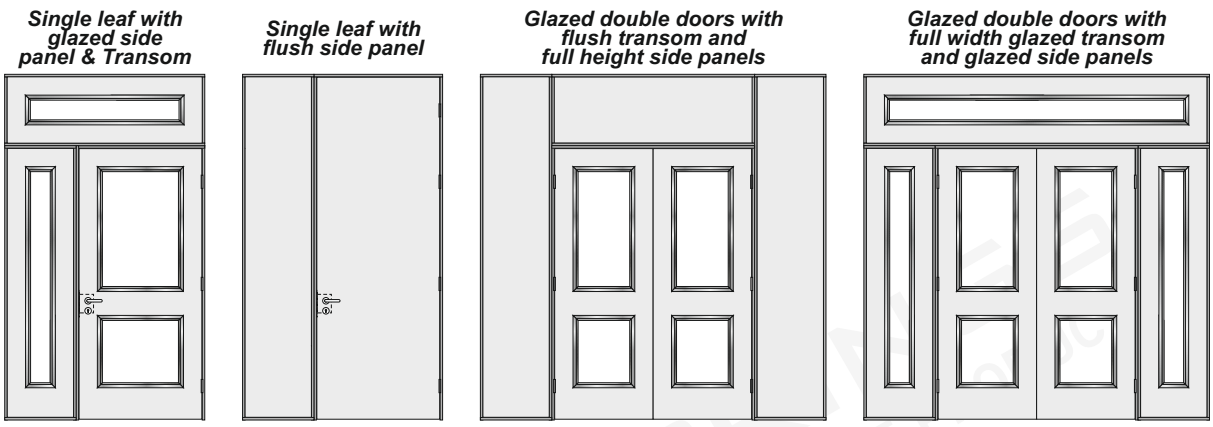
Transoms & Side Panels

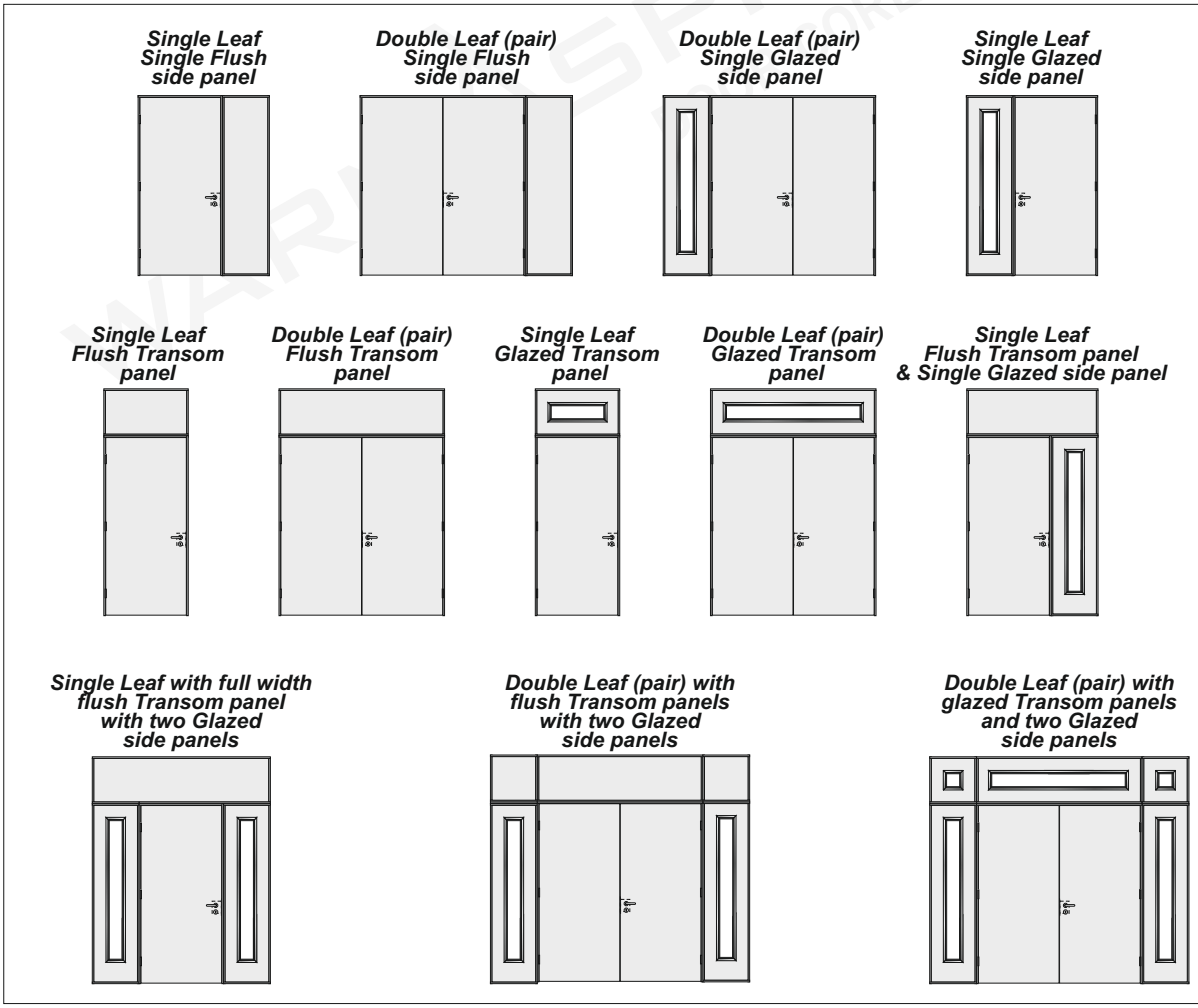
Design Options:

Fig. 11.8

The use of WSCP products including side panels and transoms provides Designers with opportunities to create door assembly designs to satisfy a wide range of technical and aesthetic requirements.

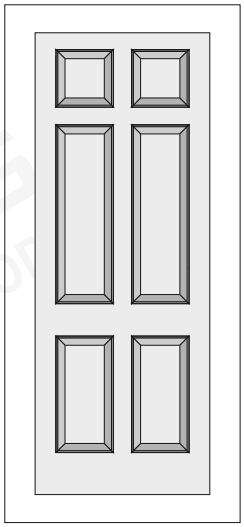
This illustration shows just a few options.





Section 12: Approved Profiled Fire Door Specifications
Intertek Door Construction Listing Ref. 30392 September 19th. 2013

Section 12:



This Section describes the minimum specifications required for the use of WSCP components for manufacture of profiled faced fire doors to comply with the Intertek Door Construction Listing Ref. 30392 September 19th. 2013 based upon the use of WSCP-412 cores. The minimum construction requirements to comply with the Listing specifications are given by reference to ***Figs. 12.1 ~ 12.4.***

Warm Springs Composite Products can provide for a wide range of moulded face designs. This section illustrates the maximum six panel designs that are approved for fire door applications. for further advice refer to:

Warm Springs Composite Products
3270 US Highway 26, Building #8
Warm Springs, OR 97761
United States of America

All door construction components must be bonded together on all faces and edges using Listed adhesives. ***See Section 8 - Listed Adhesives.***
NOTE: For 90min. fire doors the routered areas to receive moulded panel facings must be coated with Warm Springs 'Proprietary Binder' - 20% by weight Granular Expandable Graphite, applied at a thickness not exceeding 0.8mm (0.030in).

Further modifications by the use of variations to stile and rail dimensions and / or the use of additional Tectonite blocking may be necessary to suit particular applications and / or to accommodate hardware.

It is important to consider hardware requirements in advance of manufacture of the door leaf particularly with regard to the use of load bearing items e.g. Single action overhead closers without bolt through fixings, surface fitted emergency release hardware etc.
NOTE: WSCP-412 cores are low density. High density Tectonite is required to provide for the secure fixing of load bearing hardware unless bolt through fixings are used.

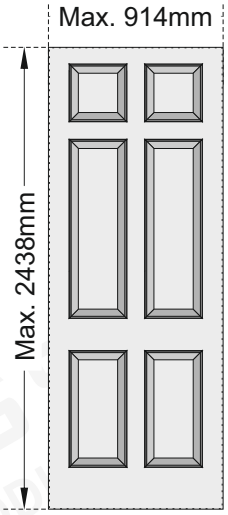
Pre manufacture planning must also take into consideration any requirements for trimming door facings and provision for wire ways (*raceways*) or the like that may require some modification to the basic constructions described in this Section.

WSCP fire rated doors must be used with Listed frame designs suitable for use with mineral core doors.
See Sections 6 & 7 - WSCP FRX Frames.

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP PROFILE DOORS.
See pages 12.11 ~ 12.13 for Listed hardware for use with WSCP Profile Doors.

WSCP-412 60min. - Anti-Fire Stiles - Up to 2438mm (8ft. high):

Fig.12.1



WSCP-412 Core up to 60min - Single Leaf

60min. Profile design single leaf single swing doors up to 2438mm (8ft.) high x 914mm (3ft.) wide:

Core: Up to 2 pieces WSCP-412 core - ***See page 12.4 - Fig. 12.5***

Stiles - Category 'A' doors: 11mm Anti-Fire composite + approved intumescent + 11mm Anti-Fire composite board + Max. 6.3mm finished thickness Min. 513kg/m3 density timber edge band / lipping. ***See page 12.5 - Fig. 12.7***

Stiles - Category 'B' doors: 2No. 11mm layers Anti-Fire Composite board + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.5 - Fig. 12.8

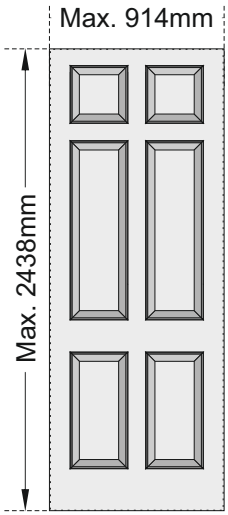
Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.6 - Fig.12.10

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.7 -Fig. 12.12***

Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.4 - Fig. 12.6

WSCP-412 60min. - Tectonite Stiles - Up to 2438mm (8ft. high):

Fig.12.2



WSCP-412 Core up to 60min - Single Leaf

60min. Profile design single leaf single swing doors up to 2438mm (8ft.) high x 914mm (3ft.) wide:

Core: Up to 2 pieces WSCP-412 core - ***See page 12.4 - Fig. 12.5***

Stiles - Category 'A' doors: Min. 25.4mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.6 - Fig. 12.9***

Stiles - Category 'B' doors: Min. 25.4mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See page 12.7 - Fig. 12.11***

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.6 - Fig.12.10***

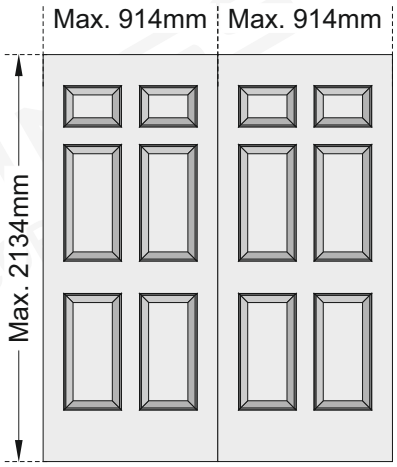
Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite. + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.7 -Fig. 12.12***

Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.4 - Fig. 12.6

WSCP-412 60min. - Tectonite Hanging Stiles - Up to 2134mm (7ft. high):

Fig.12.3

WSCP-412 Core up to 60min - Double Leaf (Pairs)



60min. Profile design double leaf (pairs) single swing doors up to 2134mm (7ft.) high x 1829mm (6ft.) o/a wide - with four point latching:

Core: Up to 2 pieces WSCP-412 core - ***See page 12.4 - Fig. 12.18***

Hanging Stiles - Category 'A' doors: Min. 25.4mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m3 density timber edge band / lipping. ***See page 12.6 - Fig. 12.9***

Meeting Stiles - Category 'A' doors: Min. 76mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.8 - Fig. 12.13

Hanging Stiles - Category 'B' doors: Min. 25.4mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See page 12.7 - Fig. 12.11***

Meeting Stiles - Category 'B' doors: Min. 76mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^{3}density timber edge band / lipping. ***See page 12.8 - Fig.12.14***

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.6 - Fig.12.10***

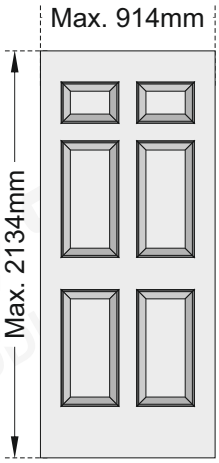
Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.7 - Fig. 12.12***

Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.4 - Fig. 12.6

WSCP-412 90min. - Tectonite Stiles - Up to 2134mm (7ft. high):

Fig.12.4

WSCP-412 Core up to 90min - Single Leaf



90min. Profile design single leaf single swing doors up to 2134mm (7ft.) high x 914mm (3ft.) wide:

Core: Up to 2 pieces WSCP-412 core - ***See page 12.4 - Fig. 12.5***

Stiles - Category 'A' doors: Min. 25.4mm Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.6 - Fig. 12.9***

Stiles - Category 'B' doors: Min. 25.4mm Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See page 12.7 - Fig. 12.11***

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.6 - Fig.12.10

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite. + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See page 12.7 - Fig. 12.12***

Bottom Rail Category 'A' & 'B' doors: Min. 38mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.
See page 12.4 - Fig. 12.6

NOTE: For 90-minute doors, the routed areas must be coated with Warm Springs' "Proprietary Binder" (20% by weight) Granular Expandable Graphite, applied at a thickness not to exceed 0.8mm (0.030 in.).

Intumescent Seals Category 'B' Doors for Positive Presure Applications:

Doors constructed to Category 'B' details can be used for positive pressure applications subject to the following:

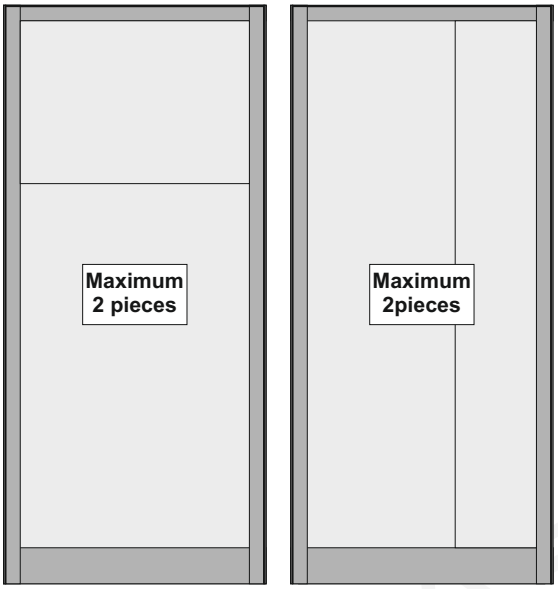
1/ When used with WSCP Listed Category 'C' *(WSCP FRX **'B'** series)* frame designs. ***See Sections 6 & 7***

2/ When used with other frame designs but with additional approved intumescent installed strictly in accordance with the manufacturers installation instructions. Approved Listed intumescent materials for this application are as follows:

Pemko: HSS 2000
Lorient: ES 980 & ES 985; NP 201, NP 203 & NP 204; HP 400.
Zero: 2002 & 3003.
Odice: Palusol PL, PM & EF.
Fitherm: PS-100.

Category 'A' & 'B' - WSCP-412: (45~90 minute Fire Door Construction) Core Assembly:

Fig.12.5



Core Assembly:

WSCP-412:

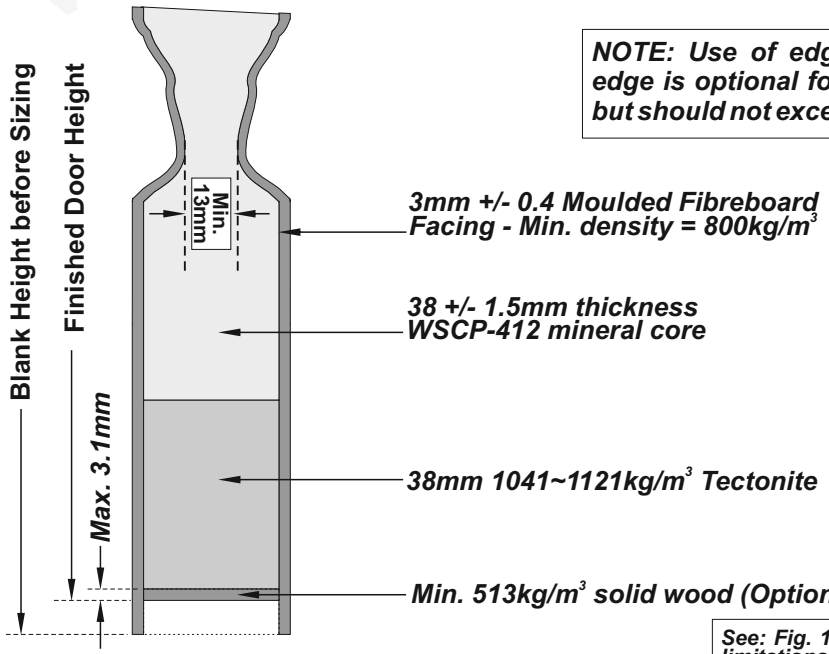
For door constructions using WSCP-412 cores, the core can be made up using a maximum of 2 pieces.

The pieces must not be less than 127mm x the full core width OR, 127mm x the full core height.

All pieces must be bonded on all edges to other core and stile and rail components using approved adhesives.

Category 'A' & 'B' WSCP-412 Core - 38mmTectonite - Bottom Rail Section Thro' Height.

Fig. 12.6

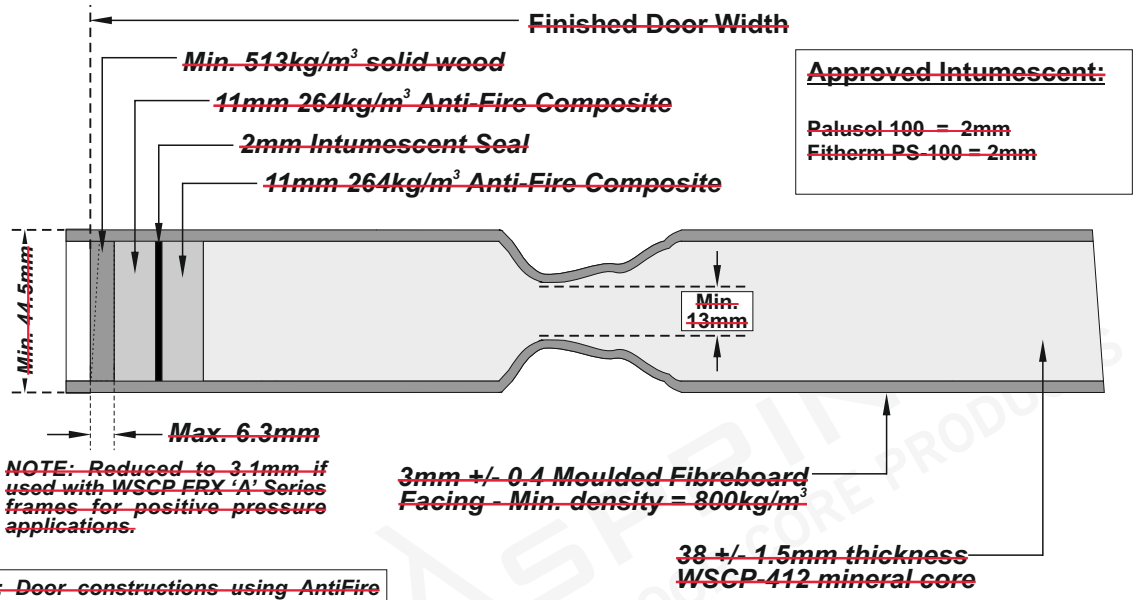


NOTE: Use of edge banding at the bottom edge is optional for Category 'A' & 'B' doors but should not exceed 3mm thickness if used.

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Category 'A' - Anti-Fire Composite Stiles
Section Thro' Width - Profile Facings

Fig.12.7



Approved Intumescent:

Palusol 100 = 2mm
Fitherm PS-100 = 2mm

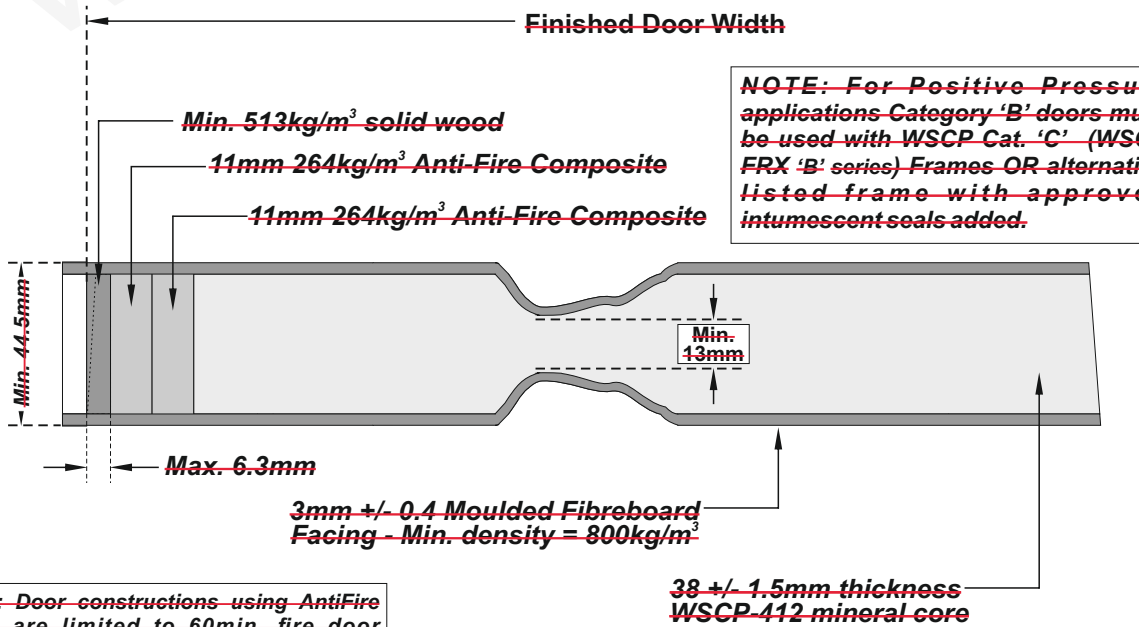
NOTE: Reduced to 3.1mm if used with WSCP FRX 'A' Series frames for positive pressure applications.

NOTE: Door constructions using AntiFire stiles are limited to 60min. fire door applications in single leaf configurations only

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Category 'B' - Anti-Fire Composite Stiles
Section Thro' Width - Profile Facings

Fig.12.8



NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' (WSCP FRX 'B' series) Frames OR alternative listed frame with approved intumescent seals added.

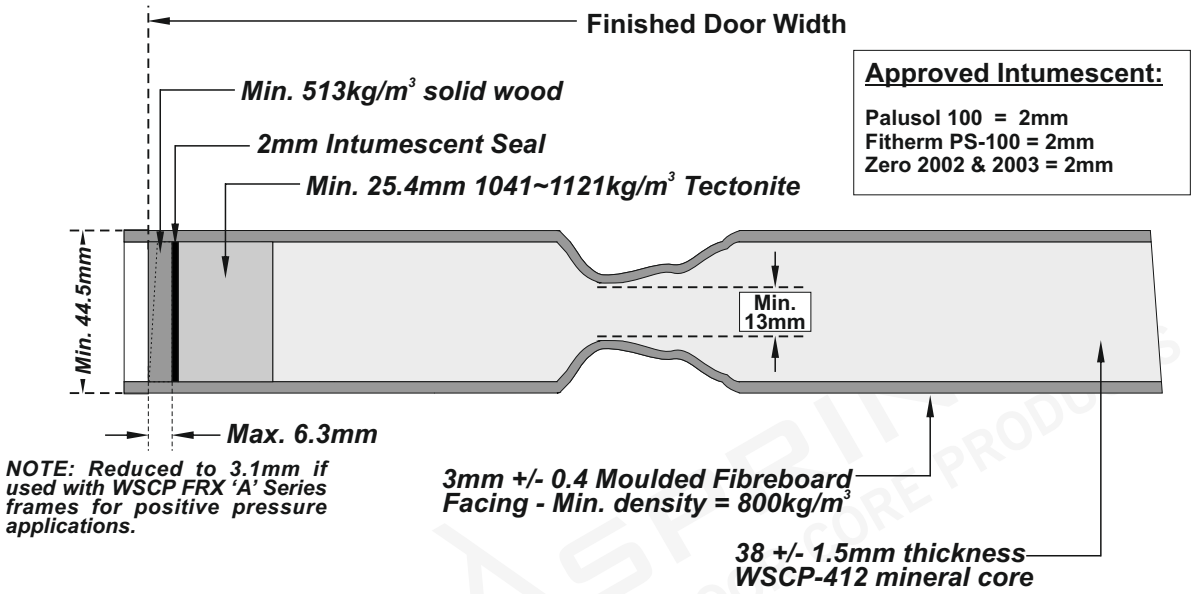
NOTE: Door constructions using AntiFire stiles are limited to 60min. fire door applications in single leaf configurations only

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

WSCP-412 Profiled Doors

Category 'A' - Tectonite Stiles
Section Thro' Width - Profile Facings

Fig.12.9



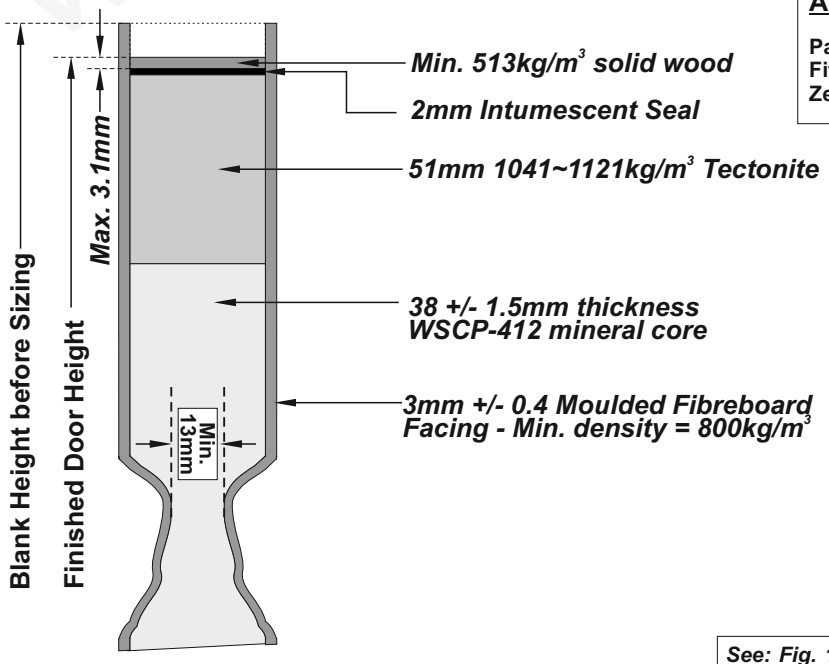
Approved Intumescent:

Palusol 100 = 2mm
Fitherm PS-100 = 2mm
Zero 2002 & 2003 = 2mm

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Category 'A' WSCP-412 - 51mm Tectonite Top Rail
Section Thro' Height.

Fig. 12.10



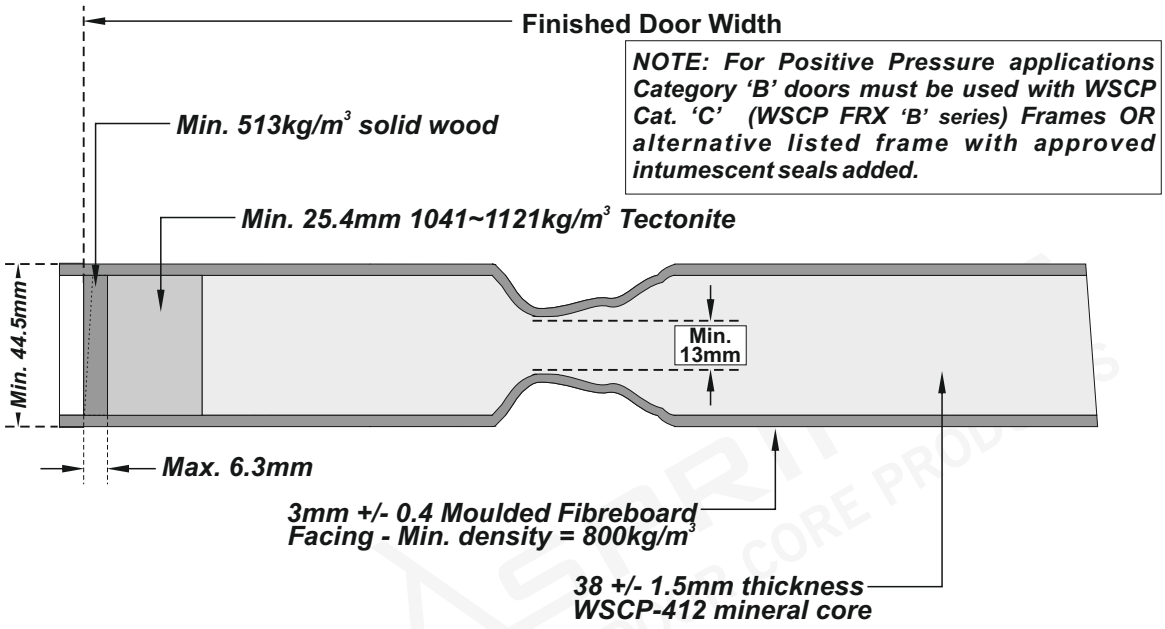
Approved Intumescent:

Palusol 100 = 2mm
Fitherm PS-100 = 2mm
Zero 2002 & 2003 = 2mm

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Category 'B' - Tectonite Stiles
Section Thro' Width - Profile Facings

Fig.12.11

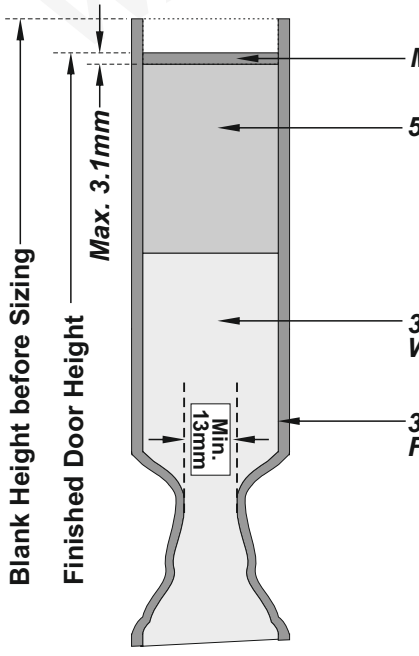


NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' (WSCP FRX 'B' series) Frames OR alternative listed frame with approved intumescent seals added.

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Category 'B' WSCP-412 Core - 51mmTectonite Top Rail
Section Thro' Height.

Fig. 12.12



NOTE: For Positive Pressure applications Category 'B' doors must be used with WSCP Cat. 'C' (WSCP FRX 'B' series) Frames OR alternative listed frame with approved intumescent seals added.

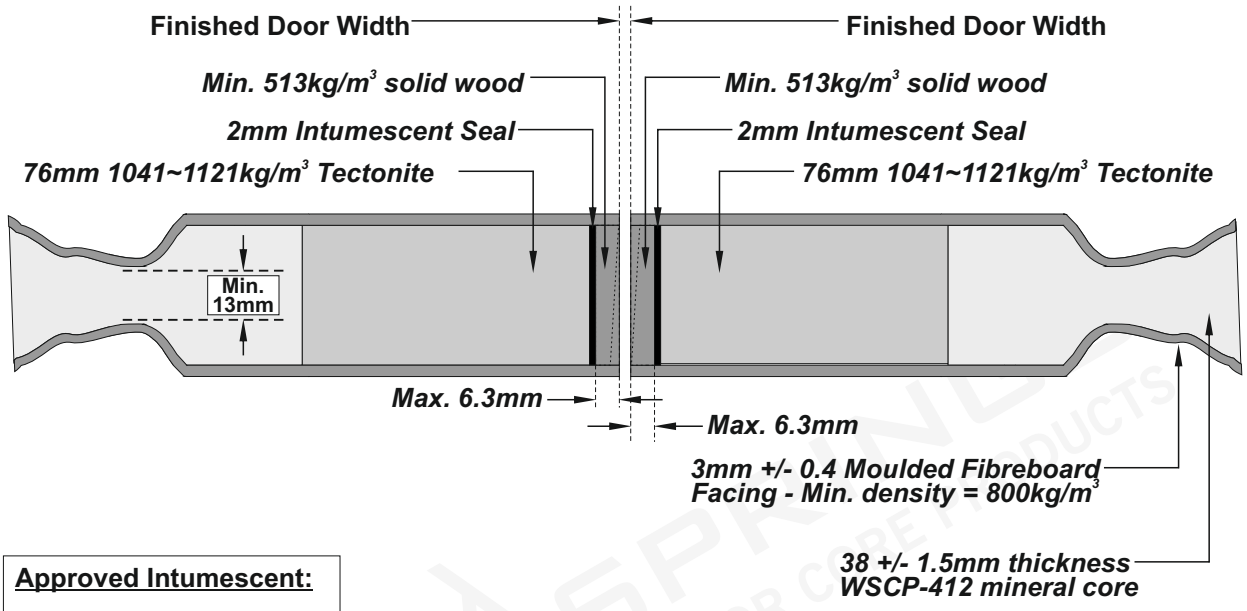
NOTE: Use of edge banding at the top edge is optional for Category 'B' doors but should not exceed 3.1mm thickness if used.

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

WSCP-412 Profiled Doors

Category 'A' - WSCP-412 Core - 76mm Tectonite Stiles
Section Thro' Width. 4 Point Latching - Pairs

Fig. 12.13



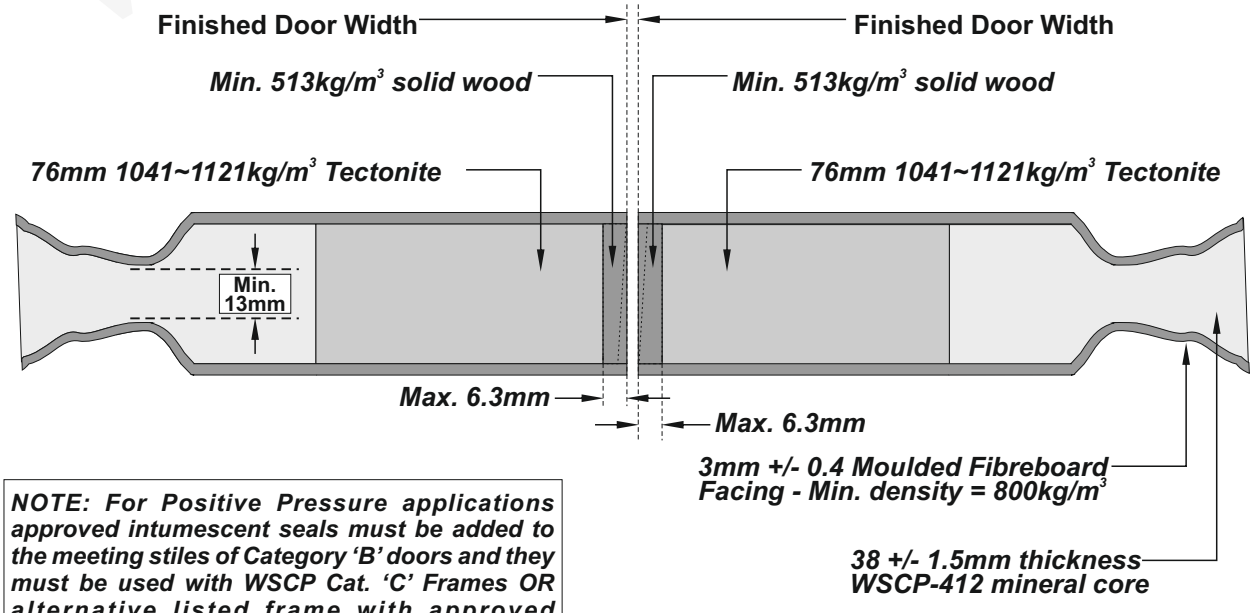
Approved Intumescent:

Palusol 100 = 2mm
Fitherm PS-100 = 2mm
Zero 2002 & 2003 = 2mm

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Category 'B' - WSCP-412 Core - 76mm Tectonite Stiles
Section Thro' Width. 4 Point Latching - Pairs

Fig. 12.14

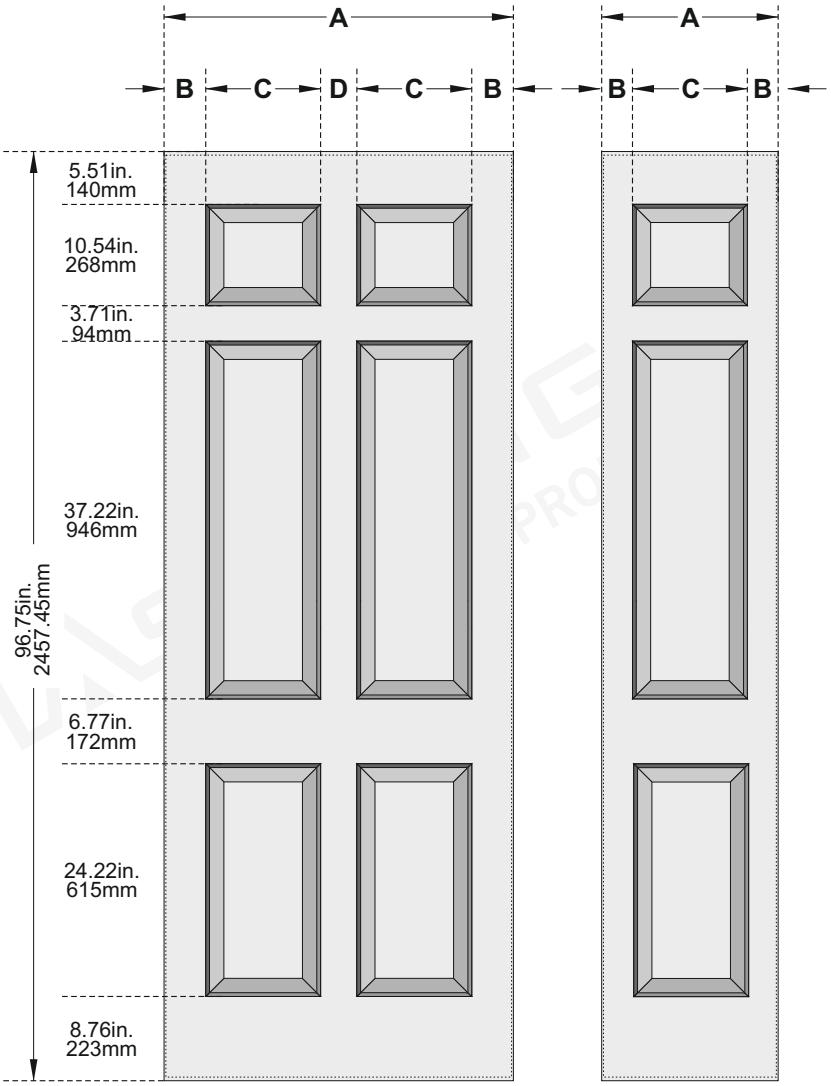


NOTE: For Positive Pressure applications approved intumescent seals must be added to the meeting stiles of Category 'B' doors and they must be used with WSCP Cat. 'C' Frames OR alternative listed frame with approved intumescent seals included in the frame design.

See: Fig. 12.1 ~ 12.4 for approved dimensional limitations according to performance.

Profile Door Skins - 2438mm *(8ft.)*

Fig. 12.15



Warm Springs Composite Products offer a wide range of profiled door skin designs.

This detail illustrates six panel options for door skins to suit a maximum 2438mm (*8ft.*) door height.
NOTE: Other door skin designs are available.

The schedule below lists door skin widths for this particular design.

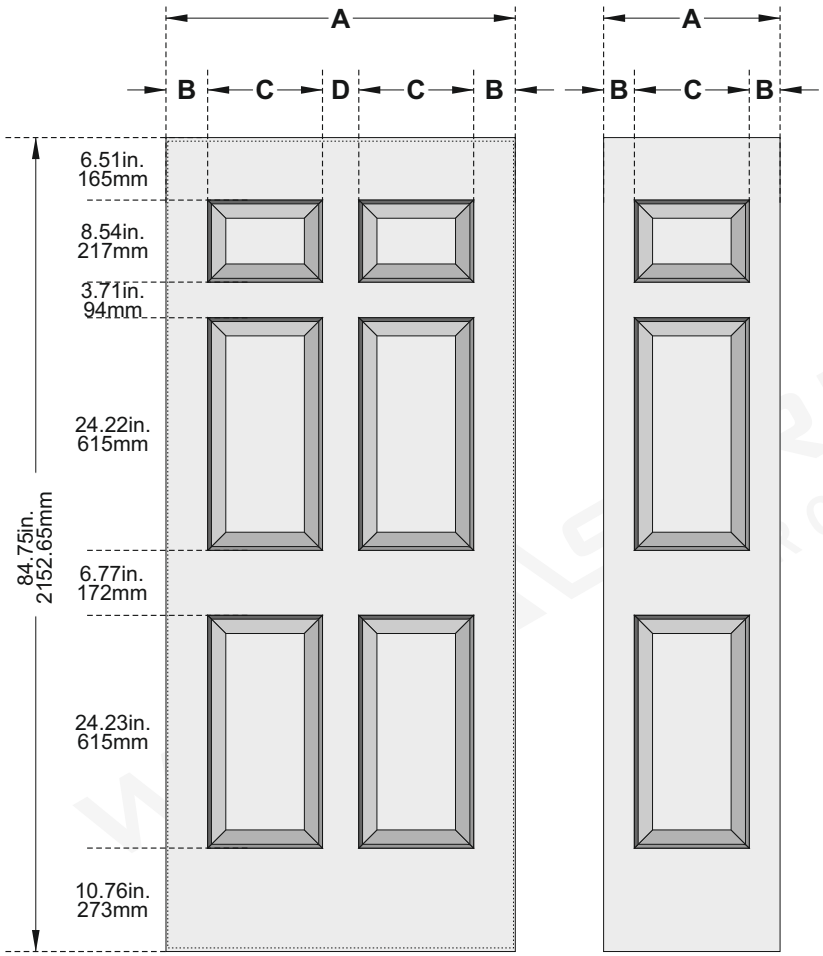
Doors complying with this design are Listed for single leaf single swing applications up to 60 minutes.

Door Skin Widths:

A		B		C		D		Max. door width	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
36.375	923.925	4.34	110.236	11.96	303.784	3.78	96.012	36	914.4
34.375	873.125	5.34	135.636	9.96	252.984	3.78	96.012	34	863.6
32.375	822.325	4.34	110.236	9.96	252.984	3.78	96.012	32	812.8
30.375	771.525	4.34	110.236	8.96	227.584	3.78	96.012	30	762
28.375	720.725	4.34	110.236	7.96	202.184	3.78	96.012	28	711.2
26.375	669.925	5.34	135.636	5.96	151.384	3.78	96.012	26	660.4
24.375	619.125	4.34	110.236	5.96	151.384	3.78	96.012	24	609.6
20.375	517.525	4.21	106.934	11.96	303.784	n/a	n/a	20	508
18.375	466.725	3.21	81.534	11.96	303.784	n/a	n/a	18	457.2
16.375	415.925	4.65	118.11	7.08	179.832	n/a	n/a	16	406.4

Profile Door Skins - 2134mm *(7ft.)*

Fig. 12.16



Warm Springs Composite Products offer a wide range of profiled door skin designs.

This detail illustrates six panel options for door skins to suit a maximum 2134mm (*7ft.*) door height.
NOTE: Other door skin designs are available.

The schedule below lists door skin widths for this particular design.

Doors complying with this design are listed for single leaf single swing applications up to 90 minutes.

The Listing also provides double leaf (*pairs*) applications in single swing configurations for performances up to 60 minutes.

Door Skin Widths:

A		B		C		D		Max. door width	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
36.375	923.925	4.34	110.236	11.96	303.784	3.78	96.012	36	914.4
34.375	873.125	5.34	135.636	9.96	252.984	3.78	96.012	34	863.6
32.375	822.325	4.34	110.236	9.96	252.984	3.78	96.012	32	812.8
30.375	771.525	4.34	110.236	8.96	227.584	3.78	96.012	30	762
28.375	720.725	4.34	110.236	7.96	202.184	3.78	96.012	28	711.2
26.375	669.925	5.34	135.636	5.96	151.384	3.78	96.012	26	660.4
24.375	619.125	4.34	110.236	5.96	151.384	3.78	96.012	24	609.6
18.375	466.725	3.21	81.534	11.96	303.784	n/a	n/a	18	457.2

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP PROFILE DOORS.

Hinges:

Hinges must generally comply with NFPA 80, Table 6.4.3.1.

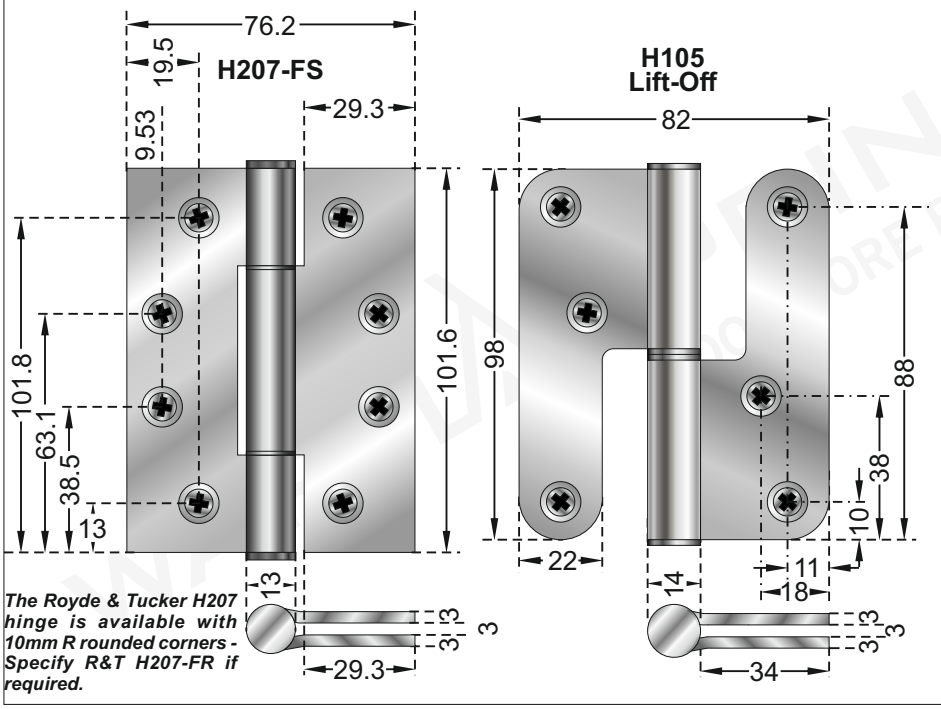
Use of Listed and labelled pivot and continuous hinges is permitted.

Minimum approved hinge size = 100 x 76mm (as tested), otherwise hinge sizes to be NFPA 80 compliant.

WSCP have carried out fire testing to meet all performance requirements defined in this manual using Royde & Tucker H207 & H105 Hi-Load hinges located as detailed below.

Royde & Tucker H207 & H105 Hi-Load hinges

Fig. 12.17



The Royde & Tucker H207 hinge is available with 10mm R rounded corners - Specify R&T H207-FR if required.

H207 Applications

Minimum door thickness = 35mm

Maximum Adjusted door weight (*3 hinges*) = 120kgs.

H105 Lift-Off Applications

Minimum door thickness = 35mm

Maximum Adjusted door weight (*3 hinges*) = 80kgs.

Adjusted door weights:

= Actual door weight plus or minus:

Used with door closer Add 20%

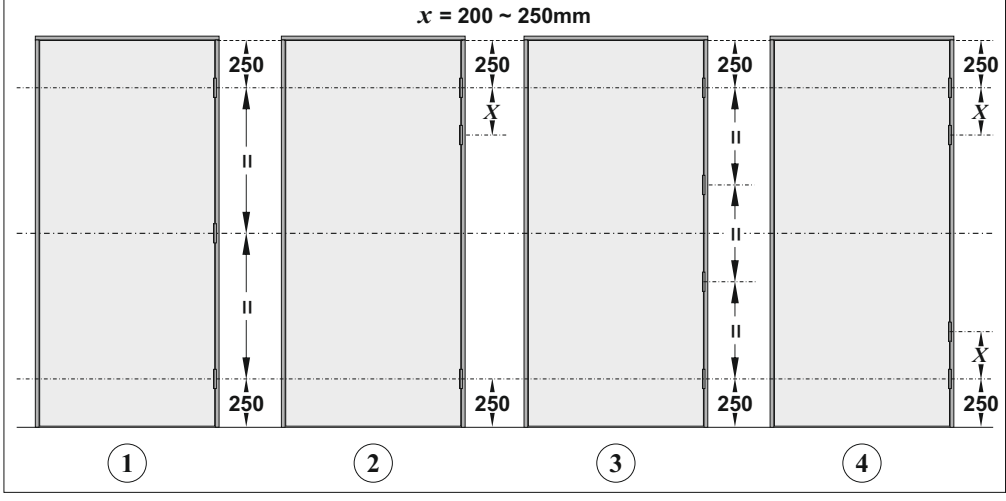
Used with door closer with backcheck facility Add 75%

Extra heavy duty door use. Add 10%

Light door use. Deduct 10%

Recommended Hinge Locations

Fig. 12.18



Maximum resistance to door distortion use Locations 1 or 3

Maximum load carrying ability use Locations 2 or 4

For door leaves over 2100mm high use Locations 3 or 4

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP PROFILE DOORS.

Latchsets:

Minimum latch bolt throw = 12mm

Cylindrical: Maximum bore = 54mm - Maximum backset = 127mm.

Latch Configurations:

Double leaf door assemblies (*pairs*) require four point latching excepting:

- Four point latching is required for pairs consisting of:
  Surface mounted Exit hardware or,
  Flush bolts top and bottom on inactive leaf; cylindrical latch and bottom flush bolt on active leaf.

Fire Exit Devices:

Surface mounted vertical rod / Rim Type.

Deadlocks:

The use of listed cylindrical deadbolts is permitted subject to the following:

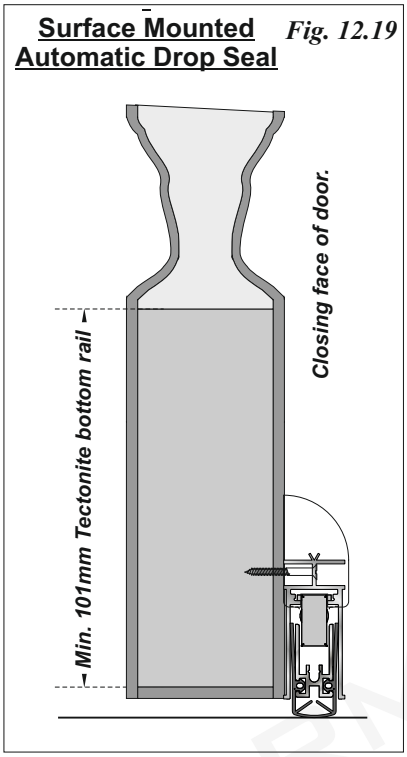
- The minimum approved distance between the cutout for the deadlock and another hardware cutout = 51mm.
- Maximum approved cylindrical deadlock cutout = 54mm diameter bore.
- The minimum approved distance between the cylindrical bore and another cutout = 98mm.
- Maximum approved backset = 69mm.
- Interconnecting Locks: Locks consisting of a combination cylindrical latch and cylindrical deadlock are approved provided both cylindrical holes are covered by a common face plate on one or both sides of the door.

Bolts:

The use of listed Surface mounted manual, automatic flush bolts or manual flush bolts is approved.

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP PROFILE DOORS.

Surface Mounted Automatic Drop Seal *Fig. 12.19*



Door Bottoms:

The use of listed surface mounted door bottoms only is approved.

Closing Devices:

The use of surface mounted closers is approved when installed with bolt through fixings.

NOTE: Surface mounted closers may be fitted using screw fixings provided that the door construction includes additional Tectonite blockings located to suit the closer fixing positions.

Viewers:

The use of listed viewers is approved subject to the following:

- Preparation to receive viewers up to 25mm diameter may be completed on site (*in the field*).
- The use of multiple viewers is permitted.

Edge Guards: ***See Section 5 - Page 5.4 -*** *Fig. 5.7*

The use of surface mounted edge guards is permitted for neutral pressure applications only.

Approved materials include steel, stainless steel and Acrovyn.

Applied Mouldings:

Applied mouldings may be up to 13mm wide and 19mm thick. These must be in wood and limited to 20% of the door area. Mouldings must not interfere with the operation of the door and must be located at least 127mm from the door edge. Mouldings must not overlap any hardware cutout. They may be attached to one or both faces of the door and attached with mechanical fasteners or adhesive. For 90min. rated doors mouldings must be attached with both mechanical and adhesives.

Bevelling (Leading Edge): ***See Section 5 - Page 5.3 -*** *Fig.5.4*

See also Appendix. 'A' - Door growth calculation - to determine bevel required to ensure that the door will clear the frame (or the adjacent door - if a pair) during its operation.

Section 13: Warm Springs STC Core Door Leaf Constructions

Section 13

Whereas Warm Springs Thermal-Lite and WS-412 door constructions provide for excellent fire resistant performance they have limited performance capabilities for applications where a sound insulation performance is required. (*Typically about STC 29dB in a fully caulked condition*).

The Warm Springs STC door construction provides for improved sound insulating performances without compromising fire performances but with more limited scope in terms of configuration applications. e.g. not approved for double leaf (*pairs*) applications.

In addition to fire testing to meet UL10(c) requirements, the Warm Springs STC door construction has also been tested to the requirements of ASTM E90. The test measures sound pressure loss through a specimen over a frequency range of 125Hz. ~ 4kHz. for the US test. (*100Hz. ~ 3.15kHz. for the European test*).

The measured sound loss over the frequency range is then adjusted by way of calculation (*defined by reference to ASTM E413*) to provide for a single modified average over the range that, in simple terms corrects the measurements to relate to average human hearing.

In the United States the single figure 'weighted index' is referred to by use of an 'STC' (*Sound Transmission Class*) prefix. In Europe the weighted index is identified by the prefix 'Rw'. Whereas there is 1/3rd. octave shift between the US and European tests the resultant weighted index figure is generally identical within STC (*or Rw*) 1dB.

Acoustic testing can be adjusted to suit various application requirements with reference made to 'Sound Spectrum'. Performances in this document relate to 'A' Spectrum testing.

The sound insulating properties for the Warm Springs STC door construction provides for a performance of STC 38dB (*Rw.38dB*) when tested in the laboratory's adapter frame and the specimen 'fully caulked'.
NOTE: 'Fully caulked' means that the specimen is sealed in an inoperable condition using heavy duty acoustic sealant on all edges.

The sound insulating performance for an operational door will be determined by the efficiency of the acoustic sealing system around the perimeter of the door. ***Section 17*** illustrates possible sealing options using seals that are suitable for sound insulation applications and which are also approved by Intertek for fire door applications. Anticipated STC ratings are provided as general guidance when using the detailed sealing systems.
NOTE: Door assemblies with maximum approved operating gaps but used without additional acoustic seals would be expected to provide for a performance of approximately STC 28dB.

Frames described by reference to ***Sections 6 & 7*** of this manual can be used with Warm Springs STC door constructions.
NOTE: Limitations relating to the use of particular frame designs applicable to Thermal-Lite and WS-412 door constructions apply equally to Warm Springs STC door constructions.

Approved Adhesives described by reference to ***Section 8*** are also approved for use with Warm Springs STC door constructions.

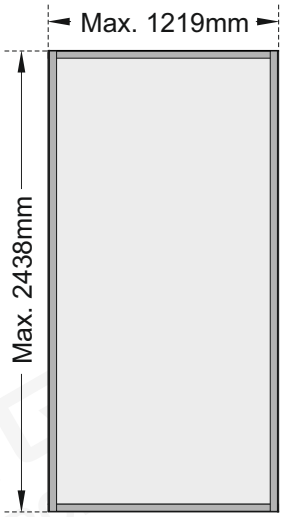
WARNING: Vision Panels (*Glazing*), Louvres (*louvers*) and Wire Ways (*Raceways*) are **not** approved for use with Warm Springs STC door constructions for fire door applications.

See ***Section 15*** for a separate listing for approved Hardware for use with Warm Springs STC door constructions.

STC Core 60min. - Tectonite Stiles - Up to 2438mm (8ft. high):

Fig. 13.1

STC Core up to 60min



60min. STC single leaf single swing doors up to 2438mm (8ft.) high x 1219mm (4ft.) wide:

Core: STC core - ***See Section 14 - Fig. 14.1***

Stiles - Category 'A' doors: Min. 38mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.2***

Stiles - Category 'B' doors: Min. 38mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping.- ***See Section 14 - Fig. 14.3***

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.4***

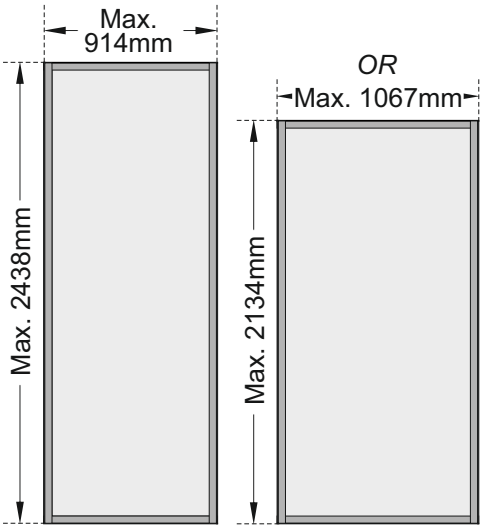
Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.5***

Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.6***

STC Core 90min. - Tectonite Stiles - Up to 2438mm (8ft. high):

Fig.13.2

STC Core up to 90min



90min. STC single leaf single swing doors up to 2438mm (8ft.) high x 914mm (3ft.) wide ***OR*** 2134mm (7ft.) high x 1067mm (3ft. 6in.) wide :

Core: STC core - ***See Section 14 - Fig. 14.1***

Stiles - Category 'A' doors: Min. 38mm WSCP Tectonite + approved intumescent + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.2***

Stiles - Category 'B' doors: Min. 38mm WSCP Tectonite + Max. 6.3mm finished thickness Min. 513kg/m^3 density timber edge lipping.- ***See Section 14 - Fig. 14.3***

Top rail - Category 'A' doors: Min. 51mm WSCP Tectonite + approved intumescent + Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.4***

Top rail - Category 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.5***

Bottom Rail Category 'A' & 'B' doors: Min. 51mm WSCP Tectonite + Optional Max. 3.1mm finished thickness Min. 513kg/m^3 density timber edge band / lipping. ***See Section 14 - Fig. 14.6***

Basic Warm Springs STC Door Leaf Construction Details

Section 14 illustrates approved basic construction details for the manufacture of WSCP STC core door designs with Tectonite stiles and rails.

The use of edge banding to the bottom edge of Category 'A' or 'B' doors is a general optional variant to the basic listing requirements.

The use of edge banding to the top edge of Category 'B' doors is a general optional variant to the basic listing requirements.

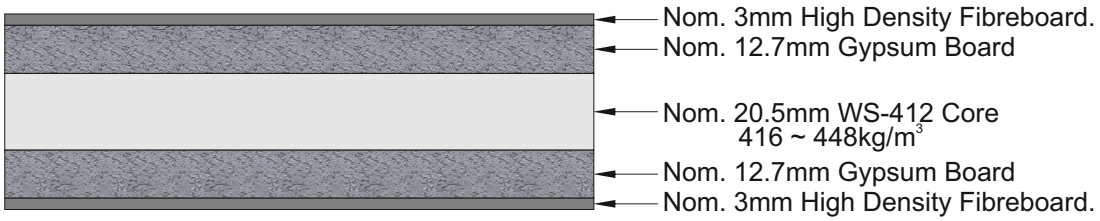
Tectonite stile and rail dimensions can be increased (*but not decreased*) to suit manufacturers requirements.

Tectonite stile and rail dimensions should be increased, (*or additional Tectonite blocking should be added*) where necessary to accommodate hardware or other load bearing additions.

NOTE: Design variants to provide for wire ways (*raceways*) and decorative features e.g. Glazing, Planted mouldings, decorative grooving are ***not*** permitted with the WSCP STC door constructions.

Warm Springs STC Core Construction

Fig. 14.1



The Warm Springs STC core construction consists of a WS-412 core sandwiched between Nom. 12mm fire rated gypsum board and faced with Nom. 3mm high density fibreboard on both faces.

The Warm Springs STC core components are bonded using high temperature proprietary adhesives. Information on adhesives is not published but is kept on file by Intertek.

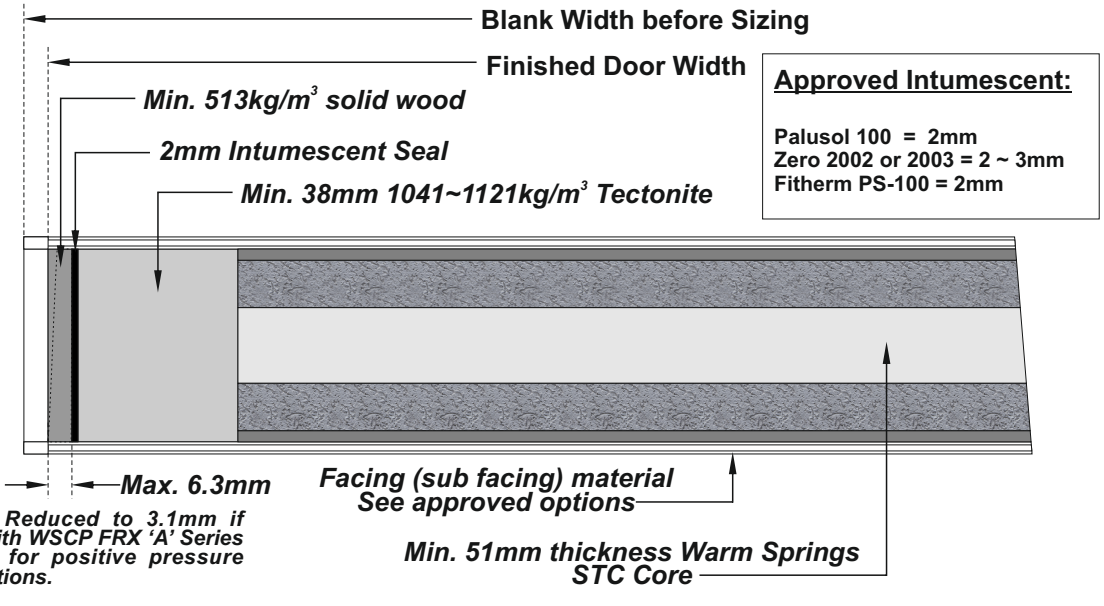
The core construction is to be calibrated to 51mm thickness and retained within Warm Springs Tectonite stiles and rails with intumescent and edge banding applied (*as required for performance*) before the application of door facings.
Approved door facings / sub facings:

HDF: Nom. 3mm thickness High Density Fibreboard. (*Min. density 920kg/m^3*).
MDF: Nom. 3mm thickness Medium density Fibreboard. (*Min. density 920kg/m^3*).
Plywood: Nom. 3mm thickness 3 or 4mm plywood complying with NWWDA 1.S.1 Type 1 or Type 11 requirements.

All components used for the manufacture of the door leaves must be bonded together using approved adhesives - See Section 8.

Category 'A' Warm Springs STC - 38mm Tectonite Stiles Section Thro' Width.

Fig. 14.2



Approved Intumescent:

Palusol 100 = 2mm
Zero 2002 or 2003 = 2 ~ 3mm
Fitherm PS-100 = 2mm

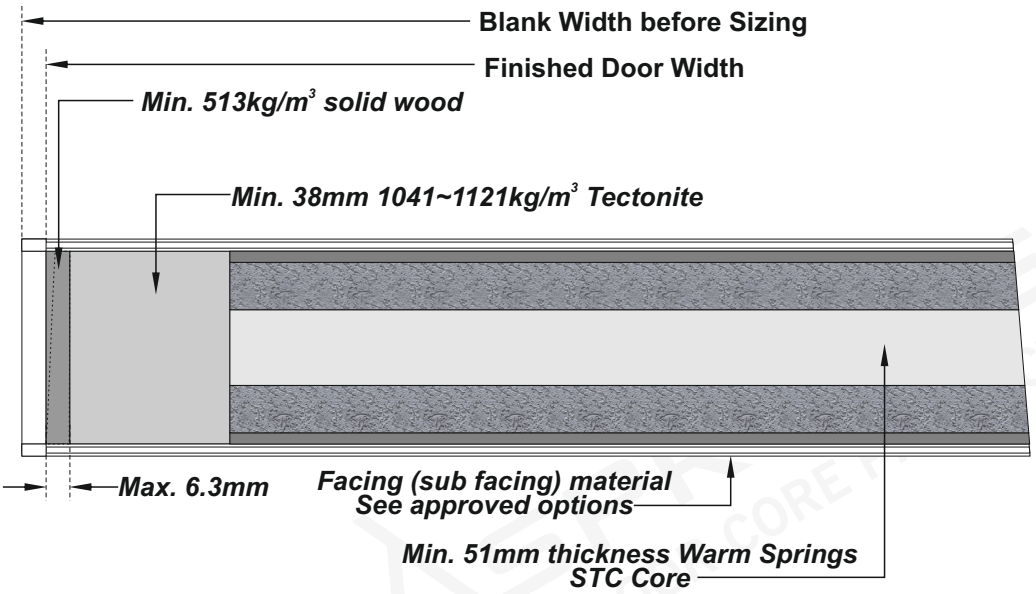
NOTE: Reduced to 3.1mm if used with WSCP FRX 'A' Series frames for positive pressure applications.

WARM SPRINGS
DOOR CORE PRODUCTS

STC Core
Door Leaf Constructions

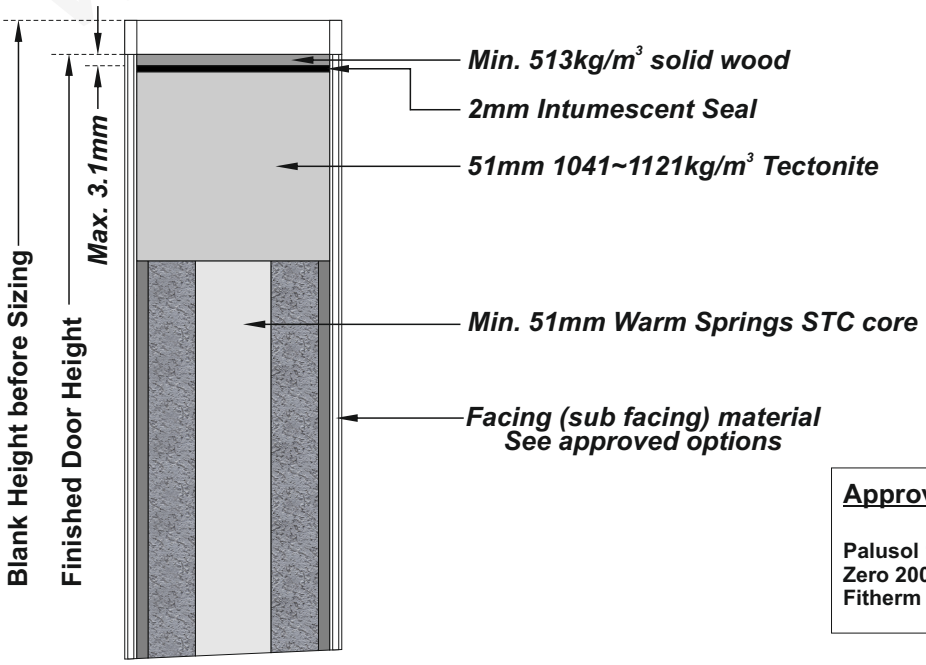
Category 'B' Warm Springs STC - 38mm Tectonite Stiles (45~90 minute Fire Door Construction) Section Thro' Width.

Fig. 14.3



Category 'A' Warm Springs STC - 51mm Tectonite Top Rail Section Thro' Height.

Fig. 14.4

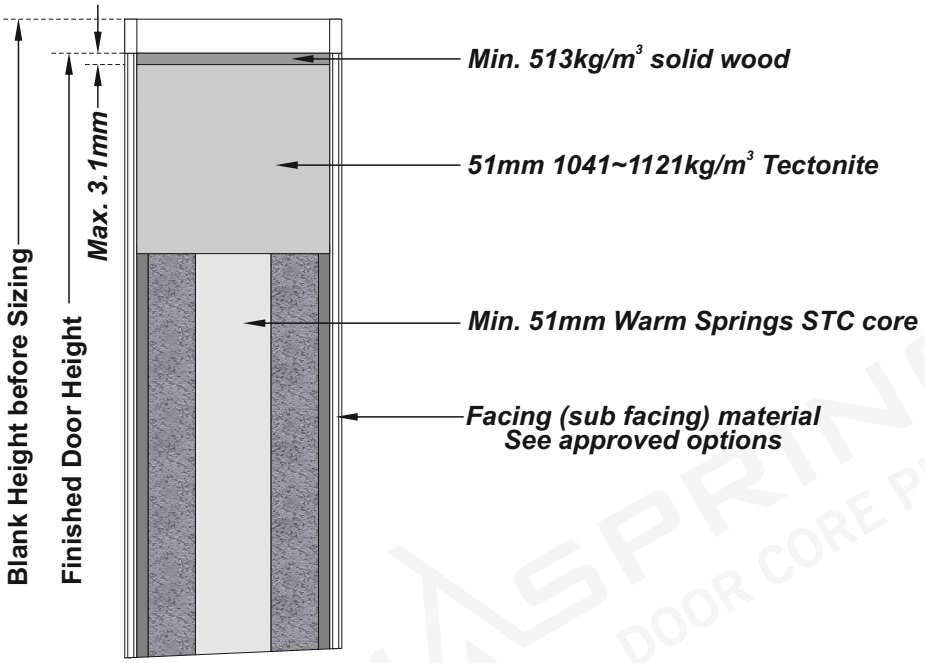


Approved Intumescent:

Palusol 100 = 2mm
Zero 2002 or 2003 = 2 ~ 3mm
Fitherm PS-100 = 2mm

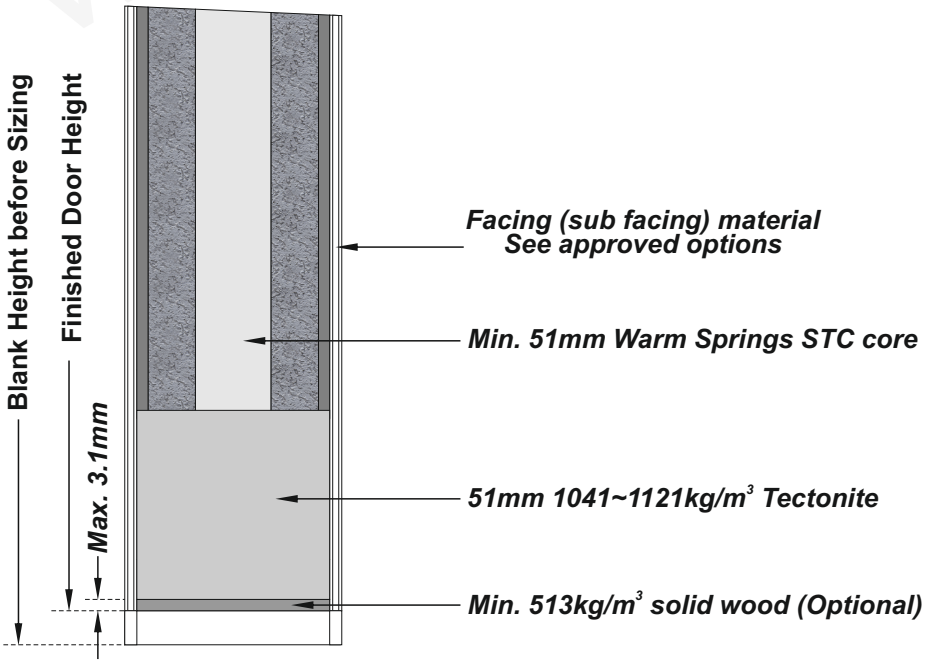
Category 'B' Warm Springs STC - 51mm Tectonite Top Rail Section Thro' Height.

Fig. 14.5



Category 'A' & 'B' Warm Springs STC core - 51mm Tectonite Bottom Rail Section Thro' Height.

Fig. 14.6



Section 15: WSCP STC Constructions Approved Variations

Section 15 describes approved variations to the basic designs described in ***Section 14.***

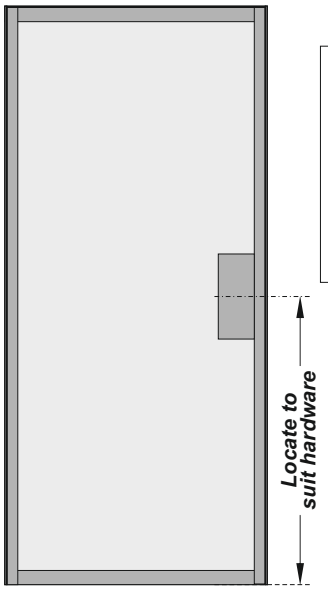
Permissible variants include:

- Additional Tectonite blockings to receive screw fixed hardware. ***Page 15.1***
- Optional door facings. ***Page 15.1***
- The application of decorative door edge facings. ***Page 15.1***
- Applying 'leading edges' to the closing stiles of doors (*i.e. bevelling door edges*) to accommodate 'door growth' during operation. ***Page 15.2***

Door Leaf Constructions
WSCP-STC Core
Approved Variants

Category 'A' & 'B' - WSCP-STC Core: Internal Tectonite Blocking Options

Fig. 15.1



Internal Blocking:

- Optional hardware blocking Min, 127mm wide height and location to suit intended hardware fittings.

NOTE: All stiles, rails and blockings must be bonded on all sides and edges to the core and other rails using approved adhesives. (See Section 8 approved adhesives listing)

Category 'A' & 'B' - WSCP-STC Core : Decorative Edge Banding and Decorative Facings

Fig. 15.2

Decorative Edge Banding & Decorative Facings:
Decorative Edge Banding and facings refers to a material up to 1.6mm thick, serving primarily as a decorative edge or facing that is applied over the base structure including completed stiles and / or rails; the decorative facing is considered to be part of the door construction.

Approved materials for edge banding applications:

Plastic: 0.8 ~ 1.6mm thickness Plastic laminate complying with NEMA 1-LD-3 requirements.

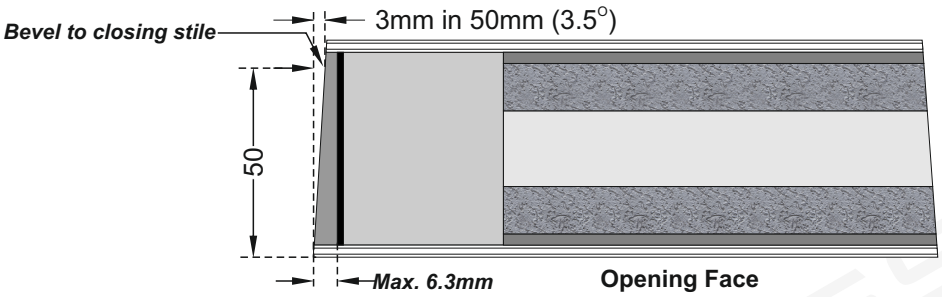
Veneer: Any species of wood veneer not exceeding 1.6mm thickness and with a density not less than 350kg/m^3.

Medium Density Overlay (*MDO*): Any Medium Density Overlay not exceeding 1.6mm thickness.

Door Leaf Constructions
WSCP-STC Core
Approved Variants

Category 'A' & 'B' - WSCP-STC Core Door Edge Bevelling

Fig. 15.3



A *'leading edge'* or bevel can be applied to the closing stile of single leaf doors to ensure that the door will clear the frame during its swing.

A standard bevel of 3mm in 50mm (*1/8in. in 2in.*).

NOTE: For further guidance for a need to apply a leading edge (edge bevel) together with a method for calculating bevel requirements See Appendix 1 'Door Growth'.

The following variants are *not* approved for use with WSCP - STC door constructions:

Vision Panels: The use of vision panels (*glazing*) is not approved for use with WSCP - STC Doors.

Louvres (*louvers*): The use of louvres (*louvers*) is not approved for use with WSCP - STC Doors.

Wire ways (*Raceways*): The use of wire ways (Raceways) is not approved for use with WSCP - STC Doors.

Applied Mouldings*: The use of Applied Mouldings is not approved for use with WSCP - STC Doors.

Face grooving: Decorative face grooving is not approved for use with WSCP - STC Doors.

NOTE: * Although the use of applied mouldings is not specifically approved for use with Warm Springs STC door constructions it is anticipated that there would be no adverse influences on either fire or acoustic performances if these were to conform with specifications and details described by reference to: Section 5 - page 5.4 - Fig. 5.8.

Section 16: WSCP-STC Doors - Hardware

- **Section 16** identifies common hardware used with WSCP - STC core fire rated door assemblies and provides for general guidance.
- Selected hardware must be fire rated for use with wood doors up to or above the fire rating required for the particular application.
- Preparation to receive hardware must be carried out in accordance with NFPA 80 and the hardware manufacturers' installation instructions / templates.
- Hardware not listed in this section must be approved (*in writing*) by Intertek Testing Services.
- Surface mounted hardware shall be installed using through bolts unless Tectonite blocking is used in the door construction to receive screw fixings.

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP STC DOORS.

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP STC DOORS.

Hinges:
Hinges must generally comply with NFPA 80, Table 6.4.3.1.

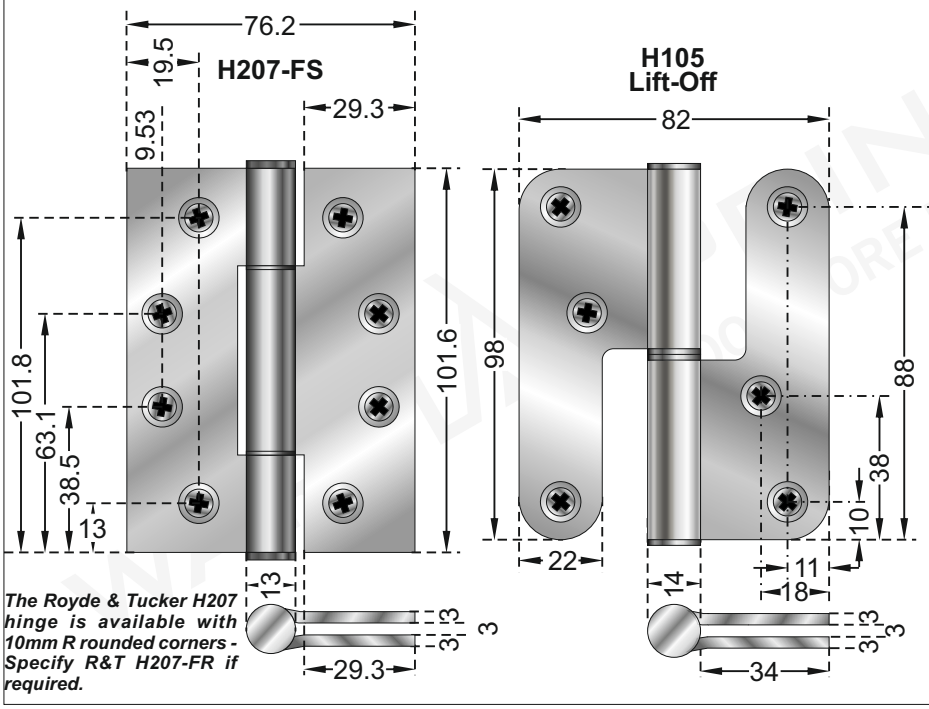
Use of Listed and labelled pivot and continuous hinges is permitted.

Minimum approved hinge size = 100 x 76mm (as tested), otherwise hinge sizes to be NFPA 80 compliant.

WSCP have carried out fire testing to meet all performance requirements defined in this manual using Royde & Tucker H207 & H105 Hi-Load hinges located as detailed below.

Royde & Tucker H207 & H105 Hi-Load hinges

Fig. 16.1



The Royde & Tucker H207 hinge is available with 10mm R rounded corners - Specify R&T H207-FR if required.

H207 Applications

Minimum door thickness = 35mm

Maximum Adjusted door weight (*3 hinges*) = 120kgs.

H105 Lift-Off Applications

Minimum door thickness = 35mm

Maximum Adjusted door weight (*3 hinges*) = 80kgs.

Adjusted door weights:

= Actual door weight plus or minus:

Used with door closer Add 20%

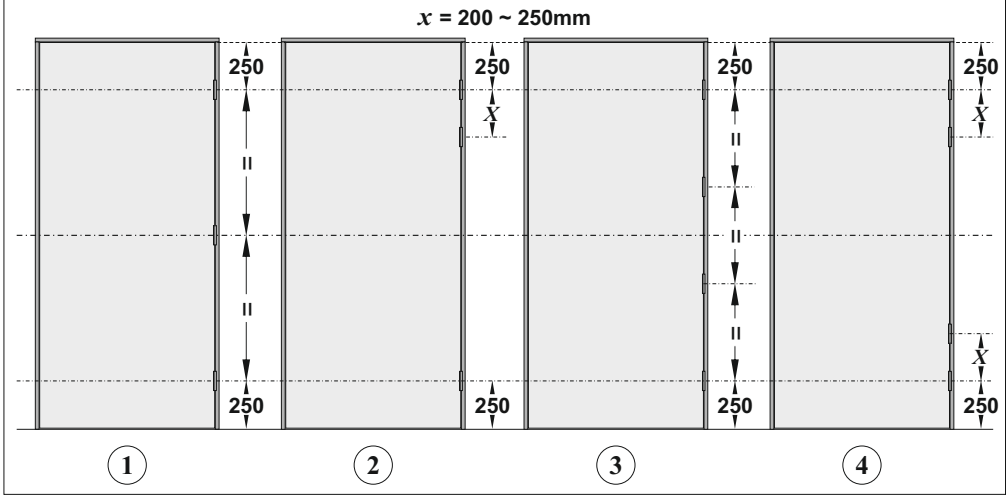
Used with door closer with backcheck facility Add 75%

Extra heavy duty door use. Add 10%

Light door use. Deduct 10%

Recommended Hinge Locations

Fig. 16.2



Maximum resistance to door distortion use Locations 1 or 3

Maximum load carrying ability use Locations 2 or 4

For door leaves over 2100mm high use Locations 3 or 4

WSCP-STC Doors
Hardware

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP STC DOORS.

Latchsets:

Minimum latch bolt throw = 19mm

Cylindrical: Maximum bore = 54mm - Maximum backset = 70mm.

Mortise: Maximum cutout = 32mm wide x 165mm deep x 105mm long. Machining depth of mortise body must not exceed the lock dimension by more than 3mm.

Deadlocks:

The use of listed and labelled mortised or cylindrical deadbolts is permitted subject to the following:

- Maximum approved cylindrical deadlock cutout = 54mm diameter bore located a minimum of 127mm centre line (*center line*) to centre line (*center line*) of the latch cutout.
- Maximum approved backset = 70mm.

Fire Exit Devices:

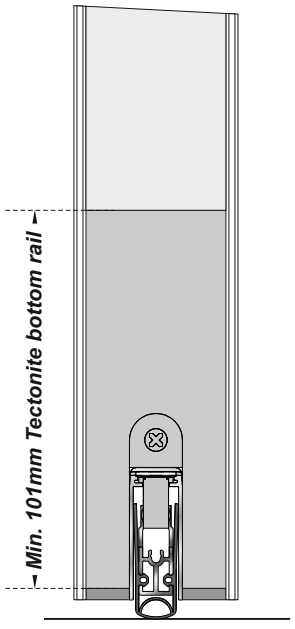
- Listed 2 point Surface Mounted Fire Exit Devices.
- Listed Rim Devices.

Door Bottoms:

The use of listed mortised or surface mounted door bottoms is approved.

- *The Norsound NOR810 Automatic Drop Seal has been independently tested for use with WSCP fire rated door assemblies and may be used for all approved fire performance applications when used with a min. 101mm high Tectonite bottom rail.*

Norsound NOR810 Automatic Drop Seal *Fig. 16.3*



Closing Devices:

The use of listed surface mounted closers is approved.

The use of listed concealed track and arm closers is approved for fire performances up to 60 mins. subject to the following:

- Maximum cutout dimensions to receive closer fittings = 580mm long x 33.5mm wide x 35mm deep.
- The door must be constructed using a min. 101mm Tectonite top rail.

HARDWARE LISTED BY REFERENCE TO *Section 10* DOES NOT APPLY TO WSCP STC DOORS.

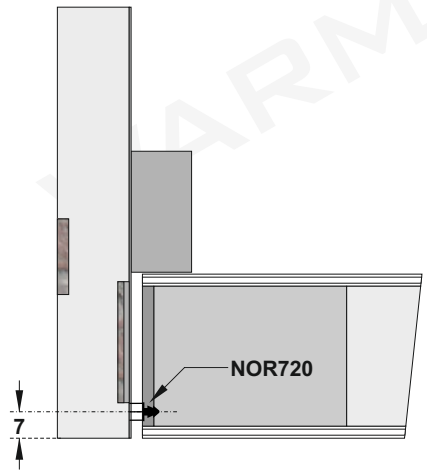
Protection Plates:

Protection plates may be fitted to WSCP STC doors subject to the following:

- The maximum approved height for the protection plate is 406mm.
- Protection plates may be to the full width of the door.
- Protection plates must be applied to the bottom edge of the door.
- Brass, Bronze, Steel or Aluminium (*aluminum*) plates may be used by reference to NFPA 80.
- Protection plates may be fixed with screws positioned at a minimum of 150mm centres and / or fully adhered using contact adhesives.
- Plates may be installed to one or both faces of the door.

Gasketing:

Norsound NOR720 Door Edge Gasket *Fig. 16.4*



Listed fire rated gasketing may be used. (*Including listed fire rated acoustic gasketing*).

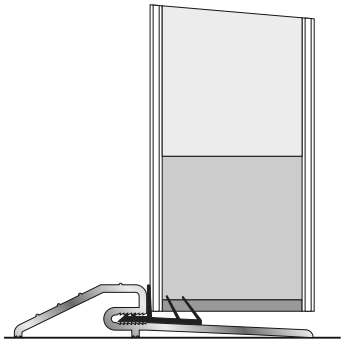
- *The Norsound NOR720 perimeter kerf-fit seal applied to the door edges has been independently tested by WSCP and approved for use with WSCP fire rated door assembly designs.*

Threshold (Optional):

Listed fire rated threshold plates may be used. Including Norsound NOR650 79mm x 14mm stepped threshold plate with seal.

- *The Norsound NOR650 stepped threshold plate with seal has been independently tested by WSCP and approved for use with all WSCP door fire rated door assembly designs.*

Norsound NOR650 Stepped Threshold with seal *Fig. 16.5*



Section 17: WSCP-STC Doors - Acoustic Applications:

Section 17 records the 'fully caulked' sound insulation performance for the WSCP-STC door construction when laboratory tested to ASTM E90 with results expressed as a single weighted index (*STC*) by reference to ASTM E413.

NOTE: 'Fully caulked' means that the specimen is sealed in an inoperable condition using heavy duty acoustic sealant on all edges.

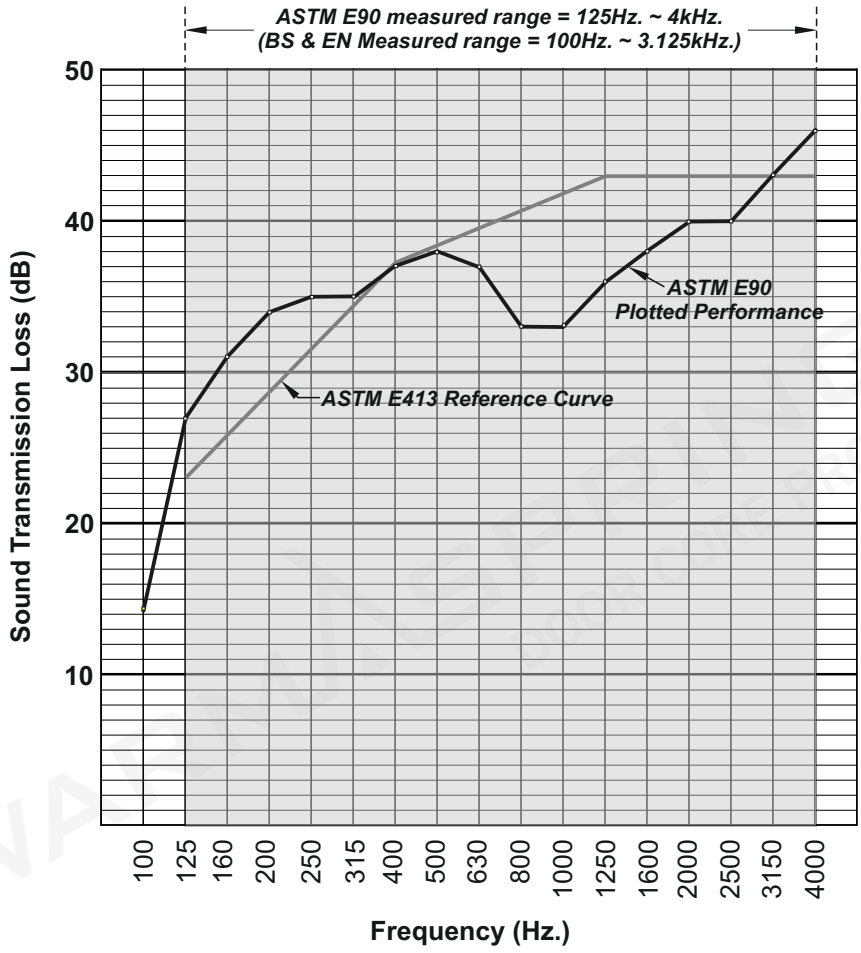
This section also suggests design for operational sound insulating door assemblies using sealing systems approved by Intertek for fire performance applications together with estimated operational sound insulating performances.

The anticipated operational performances are assessed by *Doortech 2000* based upon performances achieved during a number of tests using door designs that provide for similar fully caulked performances.

NOTE: The only certain method for determining the actual sound insulating performance of a door assembly is to test the particular design as intended for use.

WSCP-STC Doors - 'Fully Caulked' Acoustic Base test data

Fig. 17.1



A ——— = Warm Springs Composite Products 'STC' Door Construction.
Door area = 1.95m^2.
Performance = STC = 38dB. (*BS & EN Performance = Rw.38dB*).
Tested: NWAA Labs Inc., Elma. WA 98541.
Test No. NWTL 131003-08

Frequency (Hz.)	Transmission Loss (dB)
100 Hz.	14 dB
125 Hz.	27 dB
160 Hz.	31 dB
200 Hz.	34 dB
250 Hz.	35 dB
315 Hz.	35 dB

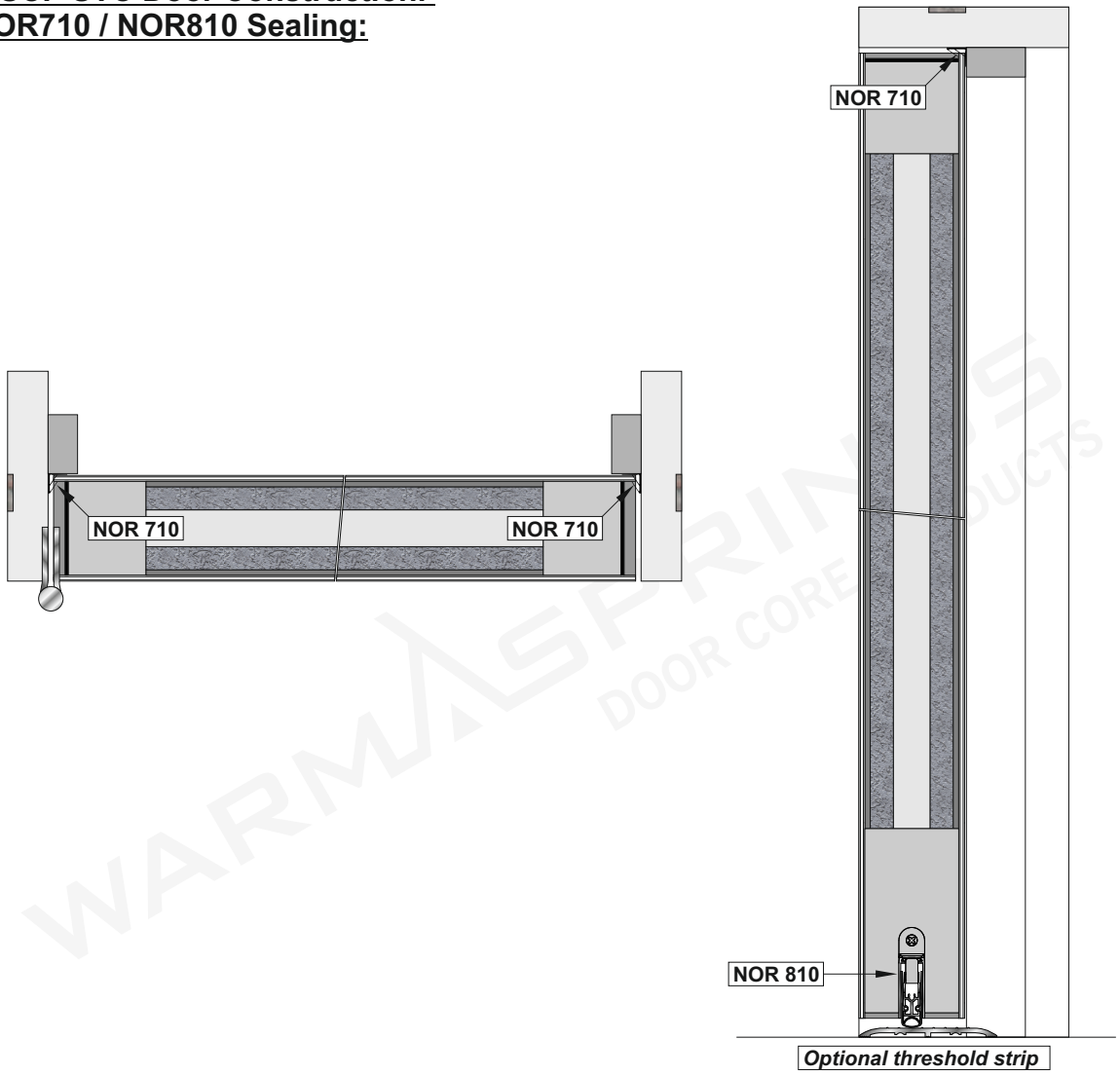
Frequency (Hz.)	Transmission Loss (dB)
400 Hz.	37 dB
500 Hz.	38 dB
630 Hz.	37 dB
800 Hz.	33 dB
1000 Hz.	33 dB
1250 Hz.	36 dB

Frequency (Hz.)	Transmission Loss (dB)
1600 Hz.	38 dB
2000 Hz.	40 dB
2500 Hz.	40 dB
3150 Hz.	43 dB
4000 Hz.	46 dB
5000 Hz.	47 dB

WSCP-STC Doors
Acoustic Applications

Fig. 17.2

WSCP STC Door Construction.
NOR710 / NOR810 Sealing:



WSCP STC Door Construction. NOR710 / 810 Sealing:

Perimeter Sealing = Norsound NOR710.

Threshold Seal = Norsound NOR810 automatic door bottom (*drop seal*).

NOTE: The NOR810 can be used to seal directly onto a smooth floor finish e.g. vinyl flooring. When used with carpeted or a rough floor finish used of a listed low level threshold plate is recommended to improve seal gasket durability.

Recommended operating gaps for optimum sealing:

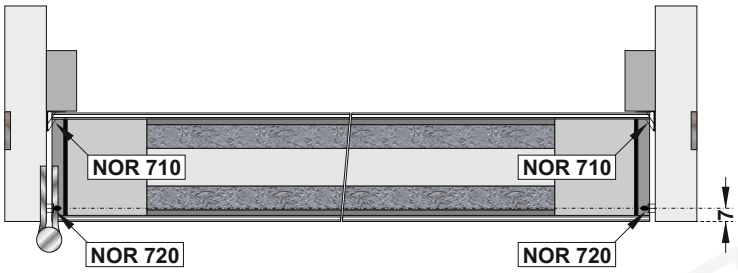
Perimeter - Head and Jambs (*Legs*) = 3mm

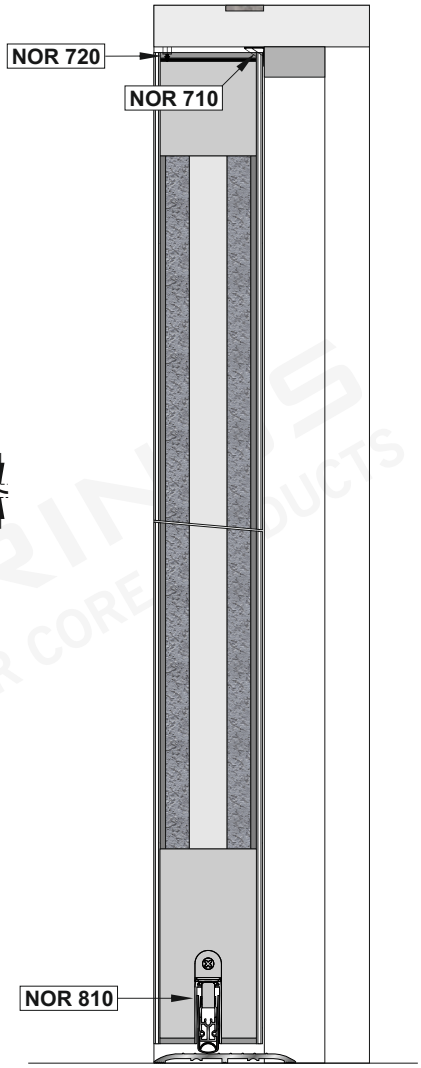
Threshold = 4mm +/- 1mm above the floor finish or top of the threshold strip (*if used*).

Assessed Performance = STC 34~35dB - ***(Technical Report Ref: AHP/200914/TR1)***

WSCP STC Door Construction.
NOR710 + NOR720 / NOR810 Sealing:

Fig. 17.3





NOTES:
1/ It is recommended that the NOR720 seal is located in the door leaf and positioned Nom. 7mm in from the opening face of the door. This results in minimal interference to the operation of the door during its swing and improves seal durability.

2/ The recommended seal location is unlikely to result in conflicts with securing hardware e.g. locks / latches but the sealing is essentially interrupted at the hinge positions. Strips of NOR710 seals can be applied to either the door or frame blade of the hinges to align with the blades of the NOR720 to reduce flanking if necessary.

WSCP STC Door Construction. NOR710 + NOR720 / 810 Sealing:

Perimeter Sealing = Norsound NOR710 + NOR720.

Threshold Seal = Norsound NOR810 automatic door bottom (*drop seal*).

NOTE: The NOR810 can be used to seal directly onto a smooth floor finish e.g. vinyl flooring. When used with carpeted or a rough floor finish used of a listed low level threshold plate is recommended to improve seal gasket durability.

Recommended operating gaps for optimum sealing:

Perimeter - Head and Jambs (*Legs*) = 3mm

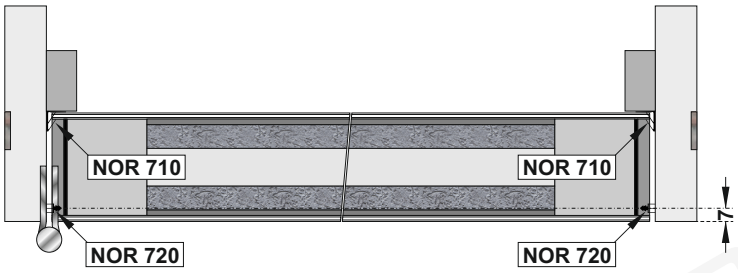
Threshold = 4mm +/- 1mm above the floor finish or top of the threshold strip (*if used*).

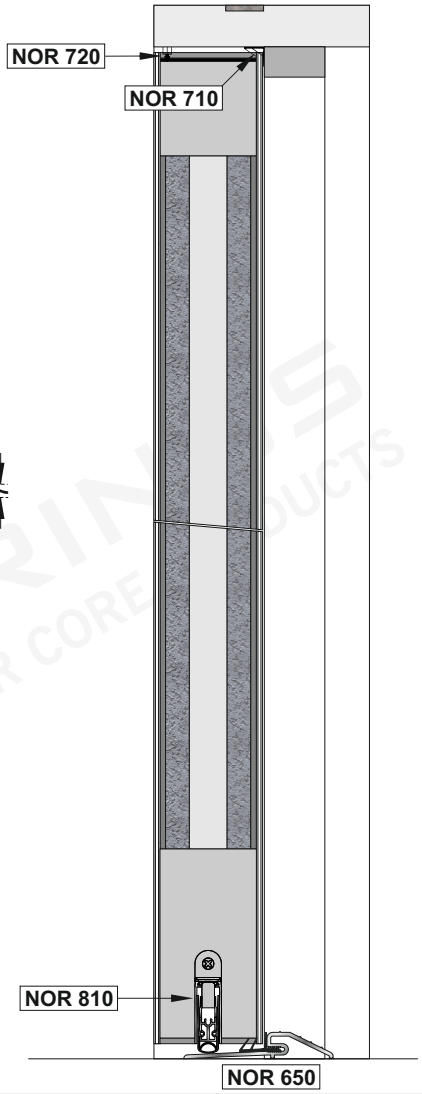
Assessed Performance = STC 35~36dB - ***(Technical Report Ref: AHP/200914/TR1)***

WSCP-STC Doors
Acoustic Applications

Fig. 17.4

WSCP STC Door Construction. NOR710 + NOR720 / NOR810 Used with NOR650 Stepped Threshold with Seal:





NOTES:
1/ It is recommended that the NOR720 seal is located in the door leaf and positioned Nom. 7mm in from the opening face of the door. This results in minimal interference to the operation of the door during its swing and improves seal durability.

2/ The recommended seal location is unlikely to result in conflicts with securing hardware e.g. locks / latches but the sealing is essentially interrupted at the hinge positions. Strips of NOR710 seals can be applied to either the door or frame blade of the hinges to align with the blades of the NOR720 to reduce flanking if necessary.

WSCP STC Door Construction. NOR710 + NOR720 / 810 + NOR 650 Sealing:

Perimeter Sealing = Norsound NOR710 + NOR720.

Threshold Seal = Norsound NOR810 automatic door bottom (*drop seal*). Norsound NOR650 stepped threshold with seal.

NOTE: The NOR810 can be used with the NOR650 stepped threshold with seal to provide for optimum sound insulation. The NOR650 can also be used without the NOR810.

Recommended operating gaps for optimum sealing:

Perimeter - Head and Jambs (*Legs*) = 3mm

Threshold = 7mm + 2mm above the floor finish.

Assessed Performance = STC 36~37dB - ***(Technical Report Ref: AHP/200914/TR1)***

Section 18 - Appendix:

Section 18 - Appendix

WARM SPRINGS COMPOSITE PRODUCTS STORAGE GUIDANCE

Storage of Door cores & components

- Store packages flat on a level surface in a dry, well ventilated building.
- DO NOT allow products to come into direct contact with water.
- Keep products in shipping packaging until being used for production.
- Do not store directly on the ground or on porous concrete surfaces that could wick moisture from below grade.
- Deliver to building site only after HVAC system is operating and balanced and plaster or cement is dry.
- Any products which contain intumescent materials MUST NOT BE SUBJECTED TO EXTREME TEMPERATURE OR HUMIDITY. Relative humidity must not be less than 35% or greater than 60% and temperature must be maintained between 50 & 90 degrees Fahrenheit. Products exposed for extended periods to conditions outside these ranges could experience damage to the intumescent material.
- Machining for hardware shall not impair the utility or strength of the products. Proper machining guidelines must be followed.
- Pilot holes must be used for all screws used for installation of hardware. Warm Springs Composite Products is not responsible for cracks in veneers or surface laminations caused by use of self-tapping or combination/metal screws, or for cracks caused by appropriate screws when applied without the proper pre-drilled pilot holes.

TECTONITE

Technical Data Sheet

Product	Composite Mineral Board
Density (pcf)	61-72
Modulus of Rupture ASTM C 133 (*psi*)	900-1745
Compressive Strength ASTM C 109-93 (*psi*)	586-2815
Moisture Content (%)	< 6
Thermal Conductivity ASTM C 182 (946 F)	1.28-1.38
(BTU – in/hr-ft2-F) (1632 F)	1.33-1.39
Shrinkage ASTM C 356 (*avg. %*)	3.9-4.7
Electrical Resistivity ASTM D 257 (*ohm-cm*) (*ambient to 1148F*)	4.10E+10 – 3.40E+10
Heat Transfer ASTM E 152 (*F*) *(Unexposed surface temp. rise above ambient, 1.5" panel, 90 min. 1772 F)*	191 – 196
Screw Holding (lbs.) Face:	*Exceeds maximum required by WDMA I.S-1A. Standard*

Product Size Availability: 4' x 8' or 4' x 10' (Panels)
(or custom cut dimensions)

Minimum Thickness: .500in.
Maximum Thickness: 2.125in.

Color: Gray

Material Safety Data Sheet (MSDS) : See pages 18.2.1 ~ 18.2.7

MATERIAL SAFETY DATA SHEET TECTONITE 900

Warm Springs Composite Products
3270 U.S. Hwy. 26 Bldg. # 8
P.O. Box 906 Date:
Warm Springs, OR 97761
(541) 553-1143

Product: TECTONITE 900
MSDS No: WSCP 202
17th. April, 2013

SECTION 1.
MATERIAL INDENTIFICATION

Trade/Material Name: Tectonite 900
Description: Insulation Board
Other Designations:
CAS: None Assigned
Chemical Name: Diatomite/Cellulose Fiber Mixture

Manufacturer:
Warm Springs Composite Products,
P.O. 906, Warm Springs, OR 97761
Phone: (541) 553-1143

SECTION II.
INGREDIENTS AND HAZARDS

Ingredient Name:	CAS Number:	Percent:	Exposure Limits:
Proprietary Binders	65997-16-2	35-40	5 mg/m3
Diatomite	61790-53-2	45-50	5 mg/m3
Reinforcing Filler			
Fibrous Glass Strands (***Continuous Filament Type***)	65997-17-3	4-6	5 mg/m3
Natural Organic fibre (*fiber*)	65996-61-4	8-10	5 mg/m3

*OSHA currently regulates these materials as “particulates not otherwise regulated” with a PEL of 15 mg/m3 for total dust, and PEL of 5 mg/m3 for respirable dust.

NOTE: This product formulation does not contain Asbestos, Volatile Organic Chemicals (VOC's) or Formaldehyde.

SECTION III.
PHYSICAL DATA

Appearance & odour: Light Grey powder – no odour

Boiling Point: NA
Vapour *(Vapor)* Pressure: NA
Water Solubility (%): NIL
Vapour *(Vapor)* Density (air=1): NA

Evaporation Rate: NA
Special Gravity (H20=1): .9-1.0
Melting Point: NA
% volatile by volume: 0

MATERIAL SAFETY DATA SHEET TECTONITE 900 contd.

SECTION IV.
FIRE AND EXPLOSION DATA

Flash Point: (*method*): This is a non-flammable product Limits: LEL%:NA UEL%:NA. NPPA Fire Hazard Symbol Codes: Flammability:0 Health:0 Reactivity:0 Special:0 Special fire-fighting procedures: None

SECTION V.
REACTIVITY DATA

Material is stable. Hazardous polymerization cannot occur.
Chemical to avoid: Strong Acids. Conditions to avoid: None is designed use.
Hazardous decomposition Products: Traces of carbon monoxide and sulfur may occur during extreme heating of the product.

SECTION VI.
TOXICOLOGY AND HEALTH INFORMATION

This product is not considered a carcinogen by NTP, OSHA, and IARC.

Summary of risks: Dusts created during fabrication, installation or demolition of this product can cause irritation to the eyes, skin, and upper respiratory system. This product contains Diatomite. Some studies indicate that long term inhalation of Diatomite dust may result in reduced pulmonary function, or mild industrial bronchitis, particularly in workers who smoke. Exposure to dust from this product should be minimized.

Medical conditions which may be aggravated by contact: Pre-existing upper respiratory and lung disease such as, but not limited to, bronchitis, emphysema, and asthma.

Target Organs: Eyes, skin, respiratory system.

Primary entry route(s): Inhalation

Acute effects: May cause temporary eye, skin and upper respiratory irritations.

Chronic effect(s): There are no known chronic health hazards from the normal use of the product. Some medical studies of Diatomite mine and mill workers suggest that long term cumulative exposures to Diatomite dust may decrease pulmonary function. These results were confounded by smoking habits and effects of secondary occupations exposures. Recent medical surveys suggest, but do not confirm, that mild industrial bronchitis may result from Diatomite exposure, particularly in workers who smoke. Continuous glass filaments, and Cellulose fibre (*fiber*) were reviewed by IARC, (*The International Agency for Research for Cancer*), and were categorized as group 3, not classifiable as to their carcinogenicity to humans, based on inadequate or limited evidence in animals, and inadequate evidence in humans.

Signs & symptoms of over exposure:

Eye contact:	Transient mechanical irritant.
Skin contact:	Possible irritation from over exposure to dust.
Inhalation:	Excessive exposures to product dust may cause upper respiratory irritation.
Ingestion:	None

First Aid:

Eye contact:	Flush with copious quantities of water
Skin contact:	Wash with mild soap and water
Inhalation:	Remove to fresh air
Ingestion:	NA

MATERIAL SAFETY DATA SHEET TECTONITE 900 contd.

SECTION VII.
SPILL, LEAK AND DISPOSAL PROCEDURES

Spill / Leak procedures: Vacuum dust created during fabrication. If sweeping is necessary, use a dust suppressant.

Waste management / Disposal: Dispose to an approved landfill. Wastes from this product, as manufactured, are not hazardous wastes as defined by RCRA (*40 CFR Part 261*). When using other foreign substances, contamination may require special disposal procedures, Comply with federal, state and local regulations.

SECTION VIII.
SPECIAL PROTECTION INFORMATION

Personal protective equipment:

Goggles: or face shield should be used during cutting, milling, or abrading.

Gloves: Use to protect against minor irritations.

Respirator: Use a mask such as 3Mth 8710 or equivalent for protection against dust. Insure proper fit.

Other: Maintain good housekeeping practices to insure minimum dust levels.

Workplace considerations:

Ventilation: Use sufficient natural or mechanical ventilation to maintain dust concentration below PEL (TLV).

Contaminated equipment: Use respirator protection if it is necessary to cut or abrade material.

SECTION IX.
SPECIAL PRECAUTIONS:

Appearance	Grey to off white	**Vapour (*vapor*) Density (Air = 1)**	Not applicable
Odour (*odor*)	Low to no odour (*odor*)	**Specific gravity (H_2O = 1)**	1.0 - 1.9
Odour (*odor*) Threshold	Not Determined	**Solubility in water (g/100g)**	0.26/100g
Physical State	Solid	**Partition Coefficient**	Not applicable
pH @ 25 ° C	~ 8	**Auto-ignition Temp**	Not Determined
Melting Point	Not applicable	**Decomposition Temp**	2,200ºF/1204ºC
Freezing Point	Not applicable	**Viscosity**	Not applicable
Boiling Point	Not applicable	**Particle Size**	Varies
Flash Point	Not Determined	**Bulk Density**	~ 63 pcf (1009 kg/m3)
Evaporation Rate (BuAc = 1)	Not applicable	**Molecular Weight**	Not Determined
Upper Flammable Limit (UFL)	Not Determined	**VOC Content**	Zero g/L
Lower Flammable Limit (LFL)	Not Determined	**Percent Volatile**	Zero
Vapour (*Vapor*) Pressure (mm Hg)	Not applicable		

MATERIAL SAFETY DATA SHEET TECTONITE 900 contd.

SECTION X.
CHEMICAL STABILITY AND REACTIVITY

STABILITY	Stable.
CONDITIONS TO AVOID	Contact with incompatibles (see below)
INCOMPATIBILITY	None known.
HAZARDOUS POLYMERISATION	None known.
HAZARDOUS DECOMPOSITION	None known.

SECTION XI.
TOXICOLOGICAL INFORMATION

ACUTE EFFECTS: The acute oral toxicity study [OECD TG 420] of calcium sulfate dihydrate showed that this chemical did not cause any changes even at 2,000 mg/kg b.w. Therefore, the oral LD50 value was more than 2,000- mg/kg b.w. for female rats. Gypsum paste applied experimentally to the eyes of rabbits was not an irritant. Gypsum dust particulate has shown an irritant action on mucous membranes of the respiratory tract and eyes. The sulfate ion has caused gastro-intestinal disturbance in humans following large oral doses. Limited studies involving the repeated inhalation of an (*unspecified*) calcium sulfate failed to identify any particular target organs in monkeys, rats and hamsters. No evidence of mutagenicity was found in Ames bacterial tests.

CHRONIC EFFECTS / CARCINOGENICITY: Panels do not release respirable dust in their installed state and therefore do not present any known health hazards when installed and properly maintained.

Crystalline Silica: Exposures to respirable crystalline silica are not expected during the normal use of this product; however, actual levels must be determined by workplace hygiene testing. The weight percent of respirable crystalline silica may not have been measured in this product. Prolonged and repeated exposure to airborne free respirable crystalline silica can result in lung disease (*i.e., silicosis*) and/or lung cancer. The development of silicosis may increase the risks of additional health effects. Smoking in combination with silica exposures increases the risk of cancer. The risk of developing silicosis is dependent upon the exposure intensity and duration.

In June, 1997, IARC classified crystalline silica (*quartz and cristobalite*) as a human carcinogen. In making the overall evaluation, the IARC Working Group noted that carcinogenicity in humans was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs.

IARC states that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1).

SECTION XII.
ECOLOGICAL INFORMATION

ENVIRONMENTAL TOXICITY: This product has no known adverse effect on ecology. Toxicity studies of gypsum performed with fish, aquatic invertebrates and aquatic plants showed no toxic effect.

Ecotoxicity value	Not determined.

MATERIAL SAFETY DATA SHEET TECTONITE 900 contd.

SECTION XIII.
DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of material in accordance with federal, state, and local regulations. Never discharge directly into sewers or surface waters. Consult with environmental regulatory agencies for guidance on acceptable disposal practices.

SECTION XIV.
TRANSPORT INFORMATION

U.S. DOT INFORMATION: Not a hazardous material per DOT shipping requirements. Not classified or regulated.

Shipping Name	Same as product name.
Hazard Class	Not classified.
UN/NA #	None. Not classified.
Packing Group	None.
Label (s) Required	Not applicable.
GGVSec/MDG-Code	Not classified.
ICAO/IATA-DGR	Not applicable.
RID/ADR	None.
ADNR	None.

SECTION XV.
REGULATORY INFORMATION

UNITED STATES REGULATIONS All ingredients of this product are included in the U.S. Environmental Protection Agency's Toxic Substances Control Act Chemical Substance Inventory.

MATERIAL	WT%	302	304	313	CERCLA	CAA Sec. 112	RCRA Code
Gypsum or Calcium Sulfate Dihydrate (CaSO4•2H2O)	>85	NL	NL	NL	NL	NL	NL
Cellulose	<10	NL	NL	NL	NL	NL	NL
Starch	<3	NL	NL	NL	NL	NL	NL
Fibrous Glass (Continuous Filament)	<1	NL	NL	NL	NL	NL	NL
Crystalline Silica	<5	NL	NL	NL	NL	NL	NL

Key :

NL = Not Listed

SARA Title III Section 302 (EPCRA) Extremely Hazardous Substances: Threshold Planning Quantity (TPQ)

SARA Title III Section 304 (EPCRA) Extremely Hazardous Substances: Reportable Quantity (RQ)

SARA Title III Section 313 (EPCRA) Toxic Chemicals: X= Subject to reporting under section 313

CERCLA Hazardous Substances: Reportable Quantity (RQ)

CAA Section 112 (r) Regulated Chemicals for Accidental Release Prevention: Threshold Quantities(TQ)

RCRA Hazardous Waste: RCRA hazardous waste code

MATERIAL SAFETY DATA SHEET TECTONITE 900 contd.

SECTION XV.
REGULATORY INFORMATION contd.

CANADIAN REGULATIONS This product has been classified in accordance with the hazard criteria of Controlled Product regulations and the MSDS contains all the information required by the Controlled Products Regulations. All ingredients of this product are included in the Canadian Domestic Substances List (DSL).

MATERIAL	WT%	IDL Item #	WHMIS Classification
Gypsum or Calcium Sulfate Dihydrate ($CaSO_4 \cdot 2H_2O$)	>85	Not Listed	Not Listed
Cellulose	<10	Not Listed	Not Listed
Starch	<3	Not Listed	Not Listed
Fibrous Glass (Continuous Filament)	<1	Not Listed	Not Listed
Crystalline Silica	<5	1406	D2A
Key :			
IDL Item#: Canadian Hazardous Products Act – Ingredient Disclosure List Item #			
WHMIS Classification: Workplace Hazardous Material Information System			

EUROPEAN REGULATIONS Risk and Safety Phrases defined by European Union Directive 67/548/EEC (Annex III and IV)

R-Phrase(s): R36/37/38
S-Phrase(s): S51 S38 S39

SECTION XVI.
OTHER INFORMATION

Label Information WARNING!

▲ Dust can cause irritation to eyes, skin and respiratory tract. Wear eye, skin and respiratory protection as necessary per working conditions. If eye contact occurs flush with water for 15 minutes. Do not ingest. If ingested, call physician. If cutting board with a power tool, use a wet or vacuum saw to reduce the amount of dust generated. Panels are heavy and can fall over, causing serious injury or death. Avoid creating a tripping hazard and do not exceed floor limit loads. KEEP OUT OF REACH OF CHILDREN.

MATERIAL SAFETY DATA SHEET TECTONITE 900 contd.

Key/Legend	
ANSI	American National Standards Institute
ACGIH	American Conference of Governmental Industrial Hygienists
CAA	Clean Air Act
CAS	Chemical Abstracts Service (Registry Number)
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
DOT	United States Department of Transportation
DSL	Canadian Domestic Substances List
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning & Community Right-to-know Act
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
MSHA	Mine Safety and Health Administration
NDSL	Canadian Non-Domestic Substances List
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Health and Safety Administration
PEL	Permissible Exposure Limit
PPE	Personal Protection Equipment
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act of 1986
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
UN/NA#	United Nations/North America number
WHMIS	Workplace Hazardous Material Information System

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his/her own particular use. As of the date of preparation of this document the foregoing information is based on data considered to be accurate and is provided in good faith to comply with applicable federal and state law. However, no warranty or representation with respect to such information in intended or given.

WARM SPRINGS COMPOSITE PRODUCTS

FIRE DOOR CORE
(WSCP-412)

TECHNICAL DATA SHEET

COLOR----------Pink

DIMENSIONS----------32.5in. x 82.25in.

FINISHED THICKNESS----------(1.500in. to 2.125in.)

DENSITY----------22 lbs./cu. ft.(+/- 2 lbs./cu. ft.)
320 kg/m^3 (+/- 32 kg/m^3)

MATERIAL----------Man-made Vitreous Fibre (*Fiber*)

MOISTURE CONTENT---------- < 6%

SHRINKAGE----------< 1%

HARDNESS (*ASTM D-2240 Type O***)**----------70-80 Durometers

HEAT TRANSFER*----------@ 30 Min.148 F (64 C)
@ 60 Min. 365 F (185 C)

** Tested at 1 ¾in. (44 mm) thickness according to ASTM 2074-00, UBC 7-2 1997, UL 10 © (2009).*

Material Safety Data Sheet (MSDS) : See pages 18.3.1 ~ 18.3.6

MATERIAL SAFETY DATA SHEET - WSCP 412 Fire Door Core

Warm Springs Composite Products
3270 Highway 26 Building # 8
P O Box 906
Warm Springs, Oregon 97761
USA

Telephone: 001 1 541 553 1143
Fax: 001 1 541 553 1145

Division: Fire Door Components

Date: 4-17-13

Issued By: Product Development Office

N/A = Not applicable or Not Available

N/K = None Known or Not Known

HMIS (0 = minimal hazard, 4 = severe hazard)
Health = 1
Flammability = 0
Reactivity = 0

Department of Transportation Information
Shipping name : Not Classified
ID No : N/A
Hazard Class : N/A
Emergency Only Contact: CHEM-TEL 001 1 800-255-3924

Section I.
Product Information

Product Name : Warm Springs 412 Fire Door Core
Chemical Name and Synonyms: N/A
Chemical or Product Family : Man-made Vitreous Fibres (*Fibers*) and Minerals

Section II.
Ingredient Information

Hazardous Components (Chemical Identity; Common Name)	**C.A.S No.**	**%**	**OSHA PEL**	**ACGIH TLV**
Fibrous Glass	65997-17-3	50 to 90	Respirable: 1 f/cc	Respirable: 1 f/cc
Chemically Bound Inert Minerals		0 to 50		

NOTE: This product formulation does not contain Asbestos, Volatile Organic Chemicals (VOC's) or Formaldehyde.

Section III.
Physical Data

Appearance and Color: White, pressed man-made vitreous fibre (*fiber*) panel
Boiling Point (degrees F) : N/A
Vapour (*Vapor*) pressure (mm Hg @ 20 degrees C) : N/A
Vapour (*Vapor*) density (Air = 1) : N/A
Solubility in Water : N/A
Specific Gravity (H2O = 1) : N/A
Percent Volatile by weight (30 min. @ 275 degrees F) : N/A
Evaporation Rate (Butyl Acetate = 1) : N/A
pH : N/A

MATERIAL SAFETY DATA SHEET - WSCP 412 Fire Door Core contd.

Section IV.
Fire and Explosion Data

Flash point : N/A
Flammable Range: LEL = N/A ; UEL = N/A
Extinguishing Media : Non Flammable
Special Fire Fighting Procedures: None
Unusual Fire and Explosion Hazards: None

Section V.
Health Data

Primary Route (s) of Entry: Inhalation, skin, and eye contact
Target Organs: Lungs, skin and eyes

Effects of Overexposure :
Acute Health Effects: Products are a transient mechanical irritant to the skin, eyes and upper respiratory system. Refer to special protection information for handling instructions.

Chronic Health Effects: *Fibre (Fiber) Glass Wool:* Fibrous glass has been classified as "not classifiable as to its carcinogenicity to human" (Group 3) by the International Agency for Research on Cancer (IARC). Fibrous glass is listed by NTP as 2, reasonably anticipated to be a carcinogen.

Carcinogenicity: **NTP :** Yes **IARC Monographs :** No **OSHA Regulated :** No

Medical Conditions Generally aggravated by Exposure: Any condition generally aggravated by respiratory and mechanical irritants in the air or on the skin. Pre-existing upper respiratory and lung disease such as, but not limited to bronchitis, emphysema, and asthma.

First Aid Procedures:
Skin: Wash with mild soap and running water
Eyes: Flush with flowing water for at least 15 minutes and if symptoms persist, seek immediate medical attention.

Section VI.
Reactivity Data

Stability : Material is stable
Incompatibility: N/K
Hazardous Decomposition Products: Carbon dioxide, and other trace pyrolysis products typical of decomposition of any organic chemical.
Hazardous Polymerization: N/A

Section VII.
Spill or Leak Procedures

Steps to be taken if material is released or spilled : N/A
Recycling Information : Dispose in accordance with federal, state and local waste disposal regulations.

MATERIAL SAFETY DATA SHEET - WSCP 412 Fire Door Core contd.

Section VIII.
Special Protection Information

During handling or machining, be certain that the work site is well ventilated, and avoid breathing dust. Wear long-sleeve, loose fitting clothes, gloves and eye protection.

Handle these materials carefully to minimize airborne dust.

If high dust levels are anticipated during use, such as with the use of power tools, use the appropriate NIOSH approved dust respirator.

All power cutting tools must be equipped with dust collectors.

After using this material, wash with warm water and mild soap. Do not scratch or rub skin if it becomes irritated. Wash work clothes separately, and then rinse the washer.

The information presented herein is supplied as a guide to those who handle or use this product. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product.

Section IX.
Physical and Chemical Properties

Appearance	Pink colored Surface and core	**Vapour (*vapor*) Density (Air = 1)**	Not applicable
Odour (*odor*)	Low to no odour (*odor*)	**Specific gravity (H_2O = 1)**	~.35
Odour (*odor*) Threshold	Not Determined	**Solubility in water (g/100g)**	Very low
Physical State	Solid Panel	**Partition Coefficient**	Not applicable
pH @ 25 º C	~ 7	**Auto-ignition Temp**	Not Determined
Melting Point	2200ºF/ 1200ºC (Slag wool)	**Decomposition Temp**	Not Determined
Freezing Point	Not Determined	**Viscosity**	Not applicable
Boiling Point	Not applicable	**Particle Size**	Not applicable
Flash Point	Not Determined	**Bulk Density**	~350 kg/m3 (~22 pcf)
Evaporation Rate (BuAc = 1)	Not applicable	**Molecular Weight**	Mixture
Upper Flammable Limit (UFL)	Not applicable	**VOC Class***	Low-emitting
Lower Flammable Limit (LFL)	Not applicable	**VOC Content**	Zero g/L
Vapour (*Vapor*) Pressure (mm Hg)	Not applicable	*NOTE: *Formaldehyde/VOC product emission classification*	

Section X.
Chemical Stability And Reactivity

STABILITY Stable.

CONDITIONS TO AVOID Moisture and contact with incompatibles (*see below*).

INCOMPATIBILITY None known.

HAZARDOUS POLYMERIZATION None known.

HAZARDOUS DECOMPOSITION The decomposition products from this material are those that would be expected from any organic (*carbon-containing*) material, and are mainly derived from pyrolysis (*burning*) of the organics. These decomposition products may include carbon monoxide, carbon dioxide, and carbon particles. None known.

MATERIAL SAFETY DATA SHEET - WSCP 412 Fire Door Core contd.

Section XI.
Toxicological Information

ACUTE EFFECTS: Direct contact with dust can cause eye and skin irritation (*mechanical*) and itchiness. Inhalation of dust can cause coughing and sneezing due to temporary irritation of nose and throat. None known.

CHRONIC EFFECTS / CARCINOGENICITY:

Slag Wool Fibre (*Fiber*): Large morbidity and mortality studies of both European and North American mineral wool manufacturing workers have been conducted. These studies have found no significant association of non-malignant (*i.e. fibrosis*) or malignant (*i.e., lung cancer or mesothelioma*) lung disease and exposures to slag wool fibres (*fibers*) and have not established a causal relationship between exposure and malignant diseases.

In 2001, the International Agency for Research on Cancer (IARC) assigned slag wool fibre (*fiber*) to the Group 3 category [***"not classifiable as to carcinogenicity to humans"***].

The synthetic mineral fibre (*fiber*) used in this product is exonerated from classification as a carcinogen in accordance with Note Q in the EU Commission Directive 97/69/EC.

Industrial hygiene testing on workers installing acoustical ceiling panels for an 8 hour work day showed that the average respirable fibre (*fiber*) exposure was 0.12 f/cc per NIOSH Method 7400-B.

Crystalline Silica: Exposures to respirable crystalline silica are not expected during the normal use of this product; however, actual levels must be determined by workplace hygiene testing. The weight percent of respirable crystalline silica may not have been measured in this product. Prolonged and repeated exposure to airborne free respirable crystalline silica can result in lung disease (*i.e., silicosis*) and/or lung cancer. The development of silicosis may increase the risks of additional health effects. Smoking in combination with silica exposures increases the risk of cancer. The risk of developing silicosis is dependent upon the exposure intensity and duration.

In June, 1997, IARC classified crystalline silica (*quartz and cristobalite*) as a human carcinogen. In making the overall evaluation, the IARC Working Group noted that carcinogenicity in humans was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs.
IARC states that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (***Group 1***).

The concentration of respirable crystalline silica measured in airborne dust samples was below the detection limit using NIOSH Method 7500.

Section XII
Ecological Information

ENVIRONMENTAL TOXICITY: This product has no known adverse effect on ecology.
Ecotoxicity value: Not determined.

MATERIAL SAFETY DATA SHEET - WSCP 412 Fire Door Core contd.

Section XIII.
Disposal Information

WASTE DISPOSAL METHOD: Dispose of material in accordance with federal, state, and local regulations. Never discharge directly into sewers or surface waters. Consult with environmental regulatory agencies for guidance on acceptable disposal practices.

Section XIV.
Transport Information

U.S. DOT INFORMATION: Not a hazardous material per DOT shipping requirements. Not classified or regulated.
Shipping Name: Same as product name.
Hazard Class: Not classified.
UN/NA #: None. Not classified.
Packing Group: None.
Label (s) Required: Not applicable.
GGVSec/MDG-Code: Not classified.
ICAO/IATA-DGR: Not applicable.
RID/ADR: None.
ADNR: None.

Section XV.
Regulatory Information

UNITED STATES REGULATIONS
All ingredients of this product are included in the U.S. Environmental Protection Agency's Toxic Substances Control Act Chemical Substance Inventory.

Man-Made Vitreous (slag wool) Fibre (*Fiber*)	50-90%
Expanded Perlite	30-50%
Starch	5-15%
Colloidal Silica	0-15 %

Note: None of the ingredients in this product are listed in the following categories:
SARA Title III Section 302 (EPCRA) Extremely Hazardous Substances: Threshold Planning Quantity (TPQ)
SARA Title III Section 304 (EPCRA) Extremely Hazardous Substances: Reportable Quantity (RQ)
SARA Title III Section 313 (EPCRA) Toxic Chemicals: X= Subject to reporting under section 313
CERCLA Hazardous Substances: Reportable Quantity (RQ)
CAA Section 112 (r) Regulated Chemicals for Accidental Release Prevention: Threshold Quantities(TQ)
RCRA Hazardous Waste: RCRA hazardous waste code.

Risk and Safety Phrases defined by European Union Directive 67/548/EEC (Annex III and IV)
R-Phrase(s): R36/37/38
S-Phrase(s): None known.

Section XVI.
Other Information

▲ **WARNING!** Dust can cause irritation to eyes, skin and respiratory tract. Cut and trim with a razor knife or hand saw to minimize dust levels. Using power tools for cutting will generate high dust levels. Power tools must be equipped with a dust collection system. Wear eye, skin and respiratory protection as necessary per working conditions. If eye contact occurs flush with water for 15 minutes. This product may contain silica. Prolonged and repeated exposures to airborne respirable crystalline silica can cause lung cancer. Smoking in combination with silica exposures increases the risk of cancer. Do not ingest. If ingested, call physician.

MATERIAL SAFETY DATA SHEET - WSCP 412 Fire Door Core contd.

Key/Legend	
ANSI	American National Standards Institute
ACGIH	American Conference of Governmental Industrial Hygienists
CAA	Clean Air Act
CAS	Chemical Abstracts Service (Registry Number)
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
DOT	United States Department of Transportation
DSL	Canadian Domestic Substances List
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning & Community Right-to-know Act
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
MSHA	Mine Safety and Health Administration
NDSL	Canadian Non-Domestic Substances List
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Health and Safety Administration
PEL	Permissible Exposure Limit
PPE	Personal Protection Equipment
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act of 1986
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
UN/NA#	United Nations/North America number
WHMIS	Workplace Hazardous Material Information System

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for his/her own particular use. As of the date of preparation of this document the foregoing information is based on data considered to be accurate and is provided in good faith to comply with applicable federal and state law. However, no warranty or representation with respect to such information in intended or given.

WARM SPRINGS COMPOSITE PRODUCTS THERMAL - LITE FIRE DOOR CORE
Technical Data Sheet

DESCRIPTION

Warm Springs Composite Products THERMAL-LITE fire door core is an attractive, low-cost board composed of noncombustible materials. THERMAL-LITE Core is lightweight, strong and readily accepts adhesives in hot or cold press applications. It is easily machined and exhibits excellent sound and heat resistant qualities. THERMAL-LITE Core is available in a variety of sizes.

THERMAL-LITE Core is certified by ITS Warnock Hersey
in 20,45 and 60-minute applications per UBC 7-2.

PHYSICAL CHARACTERISTICS

Thickness: (*nom*) 1-21/32" (*raw*) +/- 1/32"
1-1/2" (*banded*) +/- 1/32"
Sizes: Per customer request.
Squareness tolerance: +/- 1/32" per ft. max.
Approx. weight/msf: 2,500 lbs.
Compressive Strength-psi at 10% Compression: 80
Modulus of Rupture-psi min: 140

Moisture Content: 2% max by weight.
High Temperature Shrinkage - Max:
Lateral - l.5% Thickness - 1.0%
Density pcf: 18.0.

MOE in flexure-psi min: 22,000.
Colour (*Color*): Gray or Tan

NOTE: This product formulation does not contain Asbestos, Volatile Organic Chemicals (VOC's) or Formaldehyde.

The information presented in this literature represents typical values obtained by ASTM or other standard methods. The values will vary due to normal manufacturing variations. Responsibility for the application of these products rests with the user.

FOR FURTHER INFORMATION

On this product and other products offered by Warm Springs Composite Products, Contact:

Warm Springs Composite Products
Warm Springs, Oregon
1-800-853-1143 .

WARM SPRINGS COMPOSITE PRODUCTS THERMAL - LITE FIRE DOOR CORE Technical Data Sheet

DESCRIPTION

Warm Springs Composite Products THERMAL-LITE fire door core is an attractive, low-cost board composed of noncombustible materials. THERMAL-LITE Core is lightweight, strong and readily accepts adhesives in hot or cold press applications. It is easily machined and exhibits excellent sound and heat resistant qualities. THERMAL-LITE Core is available in a variety of sizes.

THERMAL-LITE Core is certified by ITS Warnock Hersey
in 20,45 and 60-minute applications per UBC 7-2.

PHYSICAL CHARACTERISTICS

Thickness: (*nom*) 1-21/32" (*raw*) +/- 1/32"
1-1/2" (*banded*) +/- 1/32"
Sizes: Per customer request.
Squareness tolerance: +/- 1/32" per ft. max.
Approx. weight/msf: 2,500 lbs.
Compressive Strength-psi at 10% Compression: 80
Modulus of Rupture-psi min: 140

Moisture Content: 2% max by weight.
High Temperature Shrinkage - Max:
Lateral - l.5% Thickness - 1.0%
Density pcf: 18.0.

MOE in flexure-psi min: 22,000.
Colour (*Color*): Gray or Tan

NOTE: This product formulation does not contain Asbestos, Volatile Organic Chemicals (VOC's) or Formaldehyde.

The information presented in this literature represents typical values obtained by ASTM or other standard methods. The values will vary due to normal manufacturing variations. Responsibility for the application of these products rests with the user.

FOR FURTHER INFORMATION

On this product and other products offered by Warm Springs Composite Products, Contact:

Warm Springs Composite Products
Warm Springs, Oregon
1-800-853-1143 .

WARM SPRINGS
DOOR CORE PRODUCTS

Product Data Sheet
WSCP Thermal - Lite

MATERIAL SAFETY DATA SHEET - WSCP THERMA-LITE Core

Warm Springs Composite Products
Highway 26 Building #8/ P.O. Box 906
Warm Springs, OR 97761

Date Issued: Nov. 15, 2000
Phone: (541) 553-1143
MSDS #00006

SECTION I
PRODUCT IDENTIFICATION

PRODUCT: THERMA-LITE Core as a Fire-Rated Door Component
CHEMICAL FAMILY: Mixture of minerals and vitreous fibre (*fiber*) made from slag.

SECTION II
INGREDIENTS

Material	Wt(%)	TLV Mg/m3	PEL Mg/m3	CAS Number
Slag wool fibre (*fiber*) (J)	35-70	10	15(T)/5(R)	*65997-1 T-3*
Kaolin	15-20	10	15(T)/5(R)	1332-58-7
Expanded perlite	10-35	10	15(T)/5(R)	93763-70-3
Starch	5-10	10	15(T)/5(R)	9005-25-8
Cellulose (recycled paper)	5-10	10	15(T)/5(R)	9004-34-6
Silica, crystalline (quartz)	>0.1	0.1(R)	0.1(R)	14808-60-7
If laminated, contains the following adhesive:				
Vinyl alcohol polymer	<1	(NE)	(NE)	9002-89-5

Key: (T) - Total (R) - Respirable (NE) - Not Established

NIOSH recommended standard is 3 fibres (*fibers*)/cc. WHMIS class D2B. This material is slag wool. Other generic terms that are used or have been used to classify this and other fibrous glassy materials include mineral wool, man-made mineral fibre (*fiber*) (MMMF), and man-made vitreous fibre (*fiber*) (MMYF)

NOTE: This product formulation does not contain Asbestos, Volatile Organic Chemicals (VOC's) or Formaldehyde.

All components of this product are included in the U.S. EPA TSCA Inventory listing. All components of this product are included in the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).

SECTION III
PHYSICAL DATA

Appearance: Gray or tan-colored
Physical State: Solid
Melting Point: Approx. 2400°F
Odour (*Odor*): Low
pH: N/A
Solubility (H20): Insoluble

MATERIAL SAFETY DATA SHEET - WSCP THERMA-LITE Core contd.

SECTION IV
FIRE AND EXPLOSION HAZARD DATA

Flash Point: None
Flammability Classification: N/A General Fire Hazards: Will not burn
Hazardous Combustion Products: Thermal decomposition will yield oxides of carbon and smoke
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Fire Fighting Equipment/Instructions: Self-contained breathing apparatus (SCBA) and full fire fighting turn out gear (Bunker gear). For **PPE** see Section V111.

SECTION V
HEALTH HAZARD DATA

ACUTE INFORMATION
The components of this product are bound in a cementious matrix. When cut or trimmed, especially with power tools, the resulting dust may cause transitory mechanical irritation to skin, eyes or respiratory tract. Use knives or razors to cut and trim. Avoid using power tools whenever possible.

Eyes: Direct contact with eye can cause mechanical irritation
Skin: This material (*in wet state or as dust*) is not chemically harmful if it gets on the skin and is not immediately washed off. However direct contact of dust and especially mineral wool fibres (*fibers*) with skin can cause skin irritation (*mechanical*) and itchiness.
Ingestion: No known effects.
Inhalation: Inhalation of dust can cause nose, throat, lungs and upper respiratory tract irritation. Persons exposed to dust may be forced to leave area because of nuisance conditions such as coughing, sneezing, and nasal irritation.
Tectonite" Mineral Core

CHRONIC INFORMATION
In 1987 the International Agency for Research on Cancer (IARC) concluded that there was limited evidence *(i.e., 2B classification)* for the carcinogenicity of airborne respirable slag wool fibres (*fibers*). IARC based its classifications on U.S. and European epidemiological studies of workers at slag wool plants. In these studies a small, yet statistically significant, increase in the rate of lung cancer was observed among the workers. Recently the U.S. epidemiological studies were updated and the authors concluded that the rate of lung cancer among the workers was not statistically significant compared to the general population.

Animal experimental studies in which slag wool fibers were injected or implanted into the chest or abdominal cavities did not produce statistically significant numbers of tumors over the lifetime of the animals.

In 1997, IARC concluded in their overall evaluation of crystalline silica that carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs. Crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans. (Group 1).

MATERIAL SAFETY DATA SHEET - WSCP THERMA-LITE Core contd.

SECTION V
HEALTH HAZARD DATA contd.

EMERGENCY AND FIRST AID PROCEDURES:

PRIMARY ROUTES OF ENTRY: Inhalation, Eyes and Skin contact.

Eyes: In case of contact, immediately flush thoroughly with copious amounts of water occasionally lifting the lower and upper lids (to remove particulates). Get medical attention immediately. Contact lenses should not be worn when working with this product.
Skin: Skin contact is not a chemical hazard. Mechanical action of fibres *(fibers)* on skin can cause itchiness. Irritation of skin may occur with prolonged and repeated contact. Rinse with cool water, followed by washing with soap and warm water. A commercially available skin cream or lotion may be helpful to treat dry skin areas.
Ingestion: No harmful effects expected. No specific recommendation. If gastric disturbance occurs, call physician.
Inhalation: If exposed to excessive levels of dust, leave the area of dust exposure and remain away until coughing and other symptoms subside. Other measures are usually not necessary, however if conditions warrant, get medical attention.

Notes to Physician: Treatment should be directed at the control ofsyrnptoms and the clinical condition. Pre-existing upper respiratory and lung disease such as, but not limited to, bronchitis, emphysema, and asthma may be aggravated by dust exposures.

Carcinogenicity of Ingredients:

MATERIAL	IARC	NTP
Crystalline silica (quartz)	Group 1	Anticipated
Slag wool Fibre (Fiber)	2B	Not Listed

Prolonged and repeated exposure to crystalline silica may result in lung disease (*i.e, silicosis*) and/or lung cancer. Respirable slag wool fibre *(fiber)* is classified by IARC as a possible human carcinogen (Group 2B).

SECTION VI
REACTIVITY DATA

Chemical Stability: Stable
Conditions to Avoid: None Known
Incompatibility: Acids (*gives off H2S under certain acidic conditions*).
Hazardous Decomposition Products: Oxides of carbon with thermal decomposition Hazardous
Polymerization: Will not Occur.

MATERIAL SAFETY DATA SHEET - WSCP THERMA-LITE Core contd.

SECTION VII
SPILL OR LEAK PROCEDURES

Steps to be Taken in case material is Released or Spilled. In case of spill, pick up or scoop up and place in container. Containment not necessary. Treat as inert material, normal cleanup procedures. Wear appropriate protective equipment. (***See Section VIII***).

Waste Disposal: Dispose of material in accordance with federal, state, local and provincial environmental regulations. Contact the local or state environmental agency for specific rules.

SECTION VIII
SPECIAL PROTECTION INFORMATION
PERSONAL PROTECTIVE EQUIPMENT

Eye & Skin: Wear eye protection (*safety glasses or goggles*) to avoid particulate irritation of the eye. Wear tight fitting goggles and gloves if dust is irritating. Wear long sleeved, loose fitting clothing closed at the neck and wrists and minimize skin contact. Wash work clothing separately from other clothing. Rinse washer thoroughly after use.

Respiratory: Ensure adequate ventilation in work area. Avoid continued and prolonged inhalation of MMMF dust when working with product. If dusty, wear a NOISH/MSHA approved dust respirator. Provide general ventilation and local exhaust ventilation to meet TLV requirements of individual ingredients and to control dusting conditions. If cutting or trimming with power equipment, dust collectors and local ventilation must be used.

SECTION IX
SPECIAL PRECAUTIONS

Procedures for Handling: Normal precautions should be followed in handling, storage and use. During handling and use wear the appropriate respiratory, eye and skin protection if warranted per environmental conditions.

Recommended Storage Methods: Keep dry.

NFPA Ratings:	Health: 0	Fire: 0	Reactivity: 0	Other: N/A
HMIS Ratings:	Health: 0	Fire: 0	Reactivity: 0	

Personal Protection: Use eye and skin protection. Use NIOSH/MSHA-approved respiratory protection when necessary.

Definition of Ratings: 0 Minimal Hazard; I Slight Hazard; 2 Moderate Hazard;
3 Serious Hazard; 4 Severe Hazard

Door Growth
Method of Calculation

Door Assembly Coordination - Operational Considerations - Door Growth Formula:

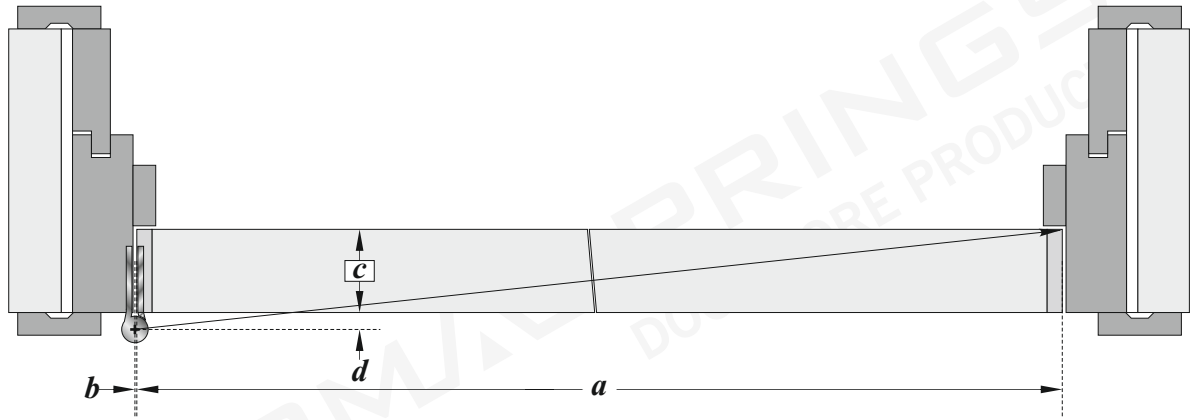
Fig. 16.1

When a door operates it will swing around the axis of the hanging device. The actual operating gap required for the door leaf to clear the frame (or adjacent door if a pair) will vary according to the following formula:

$$; \left[\sqrt[2]{(a\ )\ b)^2)\ (c\ )\ d)^2}\right] + a\ )\ b$$

a = Door leaf width.
b = Dimension from the hanging stile to the pivot centre of the hanging device.
c = Door leaf thickness.
d = Dimension from the opening face of the door to the pivot centre of the hanging device.

*NOTE: Dimensions **b & d** can be a negative figure for double action door assemblies.*



Adjusting for 'Door Growth':

'Door Growth' relates to the throw of the door during its initial movement (*until the door leaf clears the frame or the adjacent leaf*) from the closed position.

For wide and thin doors it is likely that 'door growth' will not generally give rise to problems as the growth takes place within the operating gaps. (*3mm For approved WSCP fire door applications*).

Door Growth can become a problem where thick / narrow doors are used. e.g. a 600mm wide x 54mm thick door hung on single action pivots with a 32mm projection to the pivot centre will require an operating gap of 6 ~ 7mm between the door edge and the closing jamb for the door to clear the frame with a square edged door leaf.

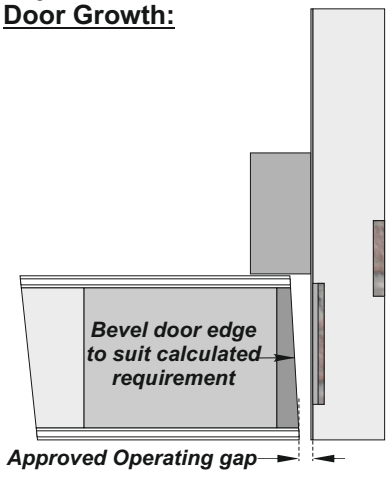
The operating gaps described by reference approved application documentation should always be measured from the opening face of the door excepting at the threshold where the measurement applies at any point within the thickness of the door.

Adjustments to accommodate 'door growth' should be made to suit the particular location and by bevelling the closing stile of the door. This may be referred to as a 'leading edge'.

Some door assembly manufacturers offer a 'factory bevel' (*leading edge*) service as an optional extra. This service usually provides for a fixed 2 ~ 3° bevel that will suit most applications.

Adjustment for Door Growth:

Fig. 16.2



Athmer / Norsound Category J Automatic Door Bottoms

Category J - Athmer / Norsound Automatic Door Bottoms (*Drop Seals*):

In addition to the Norsound NOR810 Automatic Door Bottom (*Drop Seal*) referred to elsewhere in this publication, Athmer / Norsound have carried out testing to provide for an improved range of options suitable for use with Warm Springs door constructions.

All options have been tested as described below and provide users with options in respect of the following:

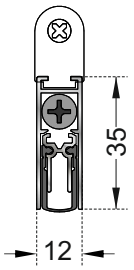
1/ Drop seal dimensions: Designed to minimise the amount of door material to be remove to house the drop seal.

2/ Method of fixing: Options include edge of door suspension bracket fixing, bottom of door flange fixing and surface fixing.

3/ Method of operation: In addition to providing for operation by plunger at the hinged side of the door, options include for operation by plunger at both the hanging and closing stiles.

Visit: www.norsound.co.uk for further information concerning Norsound products.

Doppeldicht M-12/35 einseitig
Athmer Ref: 1-392
Norsound Ref: NOR870



Operation: Plunger to hanging stile only.

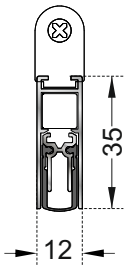
Fixing: Suspension brackets.

Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Doppeldicht M-12/35 einseitig	1-392	NOR 870	UL Certificate 20150203-20150202

Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

Athmer / Norsound Category J Automatic Door Bottoms contd.

Doppeldicht M-12/35 beidseitig
Athmer Ref: 1-393
Norsound Ref: NOR870D



Operation: Plunger to hanging and closing stile.

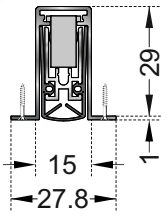
Fixing: Suspension brackets.

Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Doppeldicht M-12/35 beidseitig	1-393	NOR 870D	UL Certificate 20150203-20150202

Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

Schall-Ex L-15/30 OS

Athmer Ref: 1-881
Norsound Ref: NOR830T



Operation: Plunger to hanging stile only.

Fixing: Flange fixed with screws to bottom of door.

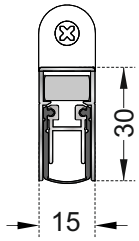
Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Schall-Ex L-15/30 OS	1-881	NOR 830T	UL Certificate 20150203-20150202

Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

Athmer / Norsound Category J Automatic Door Bottoms contd.

Schall-Ex DUO L-15 WS

Athmer Ref: 1-382
Norsound Ref: NOR830D



Operation: Plunger to hanging and closing stile.

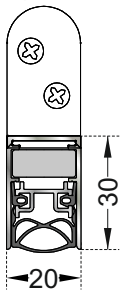
Fixing: Suspension brackets.

Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Schall-Ex DUO L-15 WS	1-382	NOR 830D	UL Certificate 20150203-20150202

Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

Schall-Ex Ultra WS einseitig

Athmer Ref: 1-290
Norsound Ref: NOR880



Operation: Plunger to hanging stile only.

Fixing: Suspension brackets.

Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Schall-Ex Ultra WS einseitig	1-290	NOR 880	UL Certificate 20150203-20150202

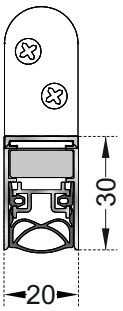
Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

WARMASPRINGS
DOOR CORE PRODUCTS

Athmer / Norsound
Category J
Automatic Door Bottoms

Athmer / Norsound Category J Automatic Door Bottoms contd.

Schall-Ex Ultra WS Beidseitig
Athmer Ref: 1-291
Norsound Ref: NOR88D



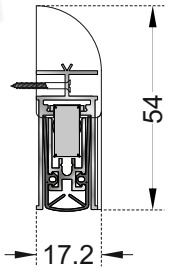
Operation: Plunger to hanging and closing stile.

Fixing: Suspension brackets.

Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Schall-Ex Ultra WS Beidseitig	1-291	NOR 880D	UL Certificate 20150203-20150202

Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

Schall-Ex L15 FS
Athmer Ref: 1-885
Norsound Ref: NOR830SM



Operation: Plunger to hanging stile only.

Fixing: Screw fixed to closing face of door.

Tested Manufacturing Reference	Athmer Catalogue Reference	Norsound Catalogue Reference	UL Certificate Reference
Schall-Ex L15 FS	1-885	NOR 830SM	UL Certificate 20150203-20150202

Test Method: UL 10C / UL 10B / CAN/ULC S104
Date of test: 3rd. February 2015

About Intertek

For more than 130 years, companies around the world have depended on Intertek to help ensure the quality and safety of their products, processes and systems.

We go beyond testing, inspecting and certifying products; we are a Total Quality Assurance provider to industries worldwide. Through our global network of state-of-the-art facilities and industry-leading technical expertise we provide innovative and bespoke Assurance, Testing, Inspection and Certification services to customers. We provide a systemic approach to supporting our customers' Quality Assurance efforts in each of the areas of their operations including R&D, raw materials sourcing, components suppliers, manufacturing, transportation, distribution and retail channels, and consumer management.

Intertek is an industry leader with more than 42,000 employees in 1,000 locations in over 100 countries. We deliver Quality Assurance expertise 24 hours a day, 7 days a week with our industry-winning processes and customer-centric culture. Whether your business is local or global, we can help to ensure that your products meet quality, health, environmental, safety, and social accountability standards for virtually any market around the world. We hold extensive global accreditations, recognitions, and agreements, and our knowledge of and expertise in overcoming regulatory, market, and supply chain hurdles is unrivalled.

Intertek can sharpen your competitive edge

- With reliable testing and certification for faster regulatory approval
- Through rapid, efficient entry to virtually any market in the world
- With Total Quality Assurance across your supply chain
- Through innovative leadership in meeting social accountability standards
- By reducing cost and minimizing health, safety, and security risks
- By becoming a TRUSTED BRAND

Intertek

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+1 800 967 5352

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+44 116 296 1620

Asia Pacific
+852 2173 8888

Section 19 - Technical reports and assessments:

Section 19 - Technical reports and assessments:

WSCP products have been extensively tested and are supported by world leading 3rd. party Certification authorities.

This section includes 3rd. Party Certification reports relating to the use of WSCP products.

Warm Springs has an ongoing test and development programme to constantly improve the performance of its products and to increase the scope for applications.

Users should refer to Warm Springs Composite Products for further advice if the intended use falls outside of the scope of applications identified in this manual.

NWAA Labs

90 Tower Blvd, Elma, WA 98541, Phone:(253) 973-1018
Email address: audio_ron@msn.com

AIRBORNE SOUND TRANSMISSION LOSS
TEST REPORT #: NWTL131007-08

Client: Warm Springs Composite Products
3270 U.S. 26
Warm Springs, OR 97761

Test Date: 3 October, 2013
Report Date: 7 October, 2013
Test Specimen: Model SR412

INTRODUCTION

The methods and procedures used in this test conform to the provisions and requirements of ASTM Procedure E 90-09, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements* and E413-10 *Classification for Rating Sound Insulation*. Copies of the test standards are available at www.astm.org. The receive room test chamber is a cuboid, 12.79 m (42.0 ft) long by 10.75 m (35.3 ft) wide by 5.31 m (17.4 ft) high, and volume is 737.4 m^3 (26041.0 ft^3). There are six fixed surfaces in the receive room. The source room test chamber is a cuboid, 10.67 m (35.0 ft) long by 8.85 m (29.0 ft) wide by 6.86 m (22.5 ft) high. There are six fixed basic wall surfaces in the source room. The source room also has 7 fixed reflecting/ absorbing shapes on the walls. A small rectangular niche is in a corner that is 1.84 m (6.0 ft) long by 1.52 m (5.0 ft) wide by 6.86 m (22.5 ft) high. Together, they have a total volume of 667.0 m^3 (23654.9 ft^3). There are thirty two sources: two Renkus-Heinz ST94s, each in a separate corner, and two mid frequency cabinets containing four conic sources in each cabinet. The room also contains twelve mid/high frequency horns, six of each located near the ceiling and facing opposite walls and splayed, and sixteen SHF drivers, two of each mounted on aluminum plates and then mounted near the ceiling and splayed randomly across the room. A test opening in the common walls is 3.17 m (10.4 ft) high by 3.78 m (12.4 ft) wide by 81.28 cm (32 in) deep. This test report relates only to the item(s) tested. Any advertisement that utilizes this test report or test data must not imply product certification or endorsement by NWAA Labs and has to include all pages of the report.

DESCRIPTION OF TEST SPECIMEN

The test specimen was a door slab with overall dimensions of 91.44 cm (36 in) wide, 213.36 cm (84 in) high, and 5.61 cm (2.21 in) thick. It was comprised of three layers: 1.27 cm (0.50 in) gypsum composite material, 2.03 cm (0.80 in) a proprietary material, then another layer of 1.27 cm (0.50 in) gypsum composite material, with a 0.32 cm (0.13 in) veneer on each side. The door slab also included 3.18 cm (1.25 in) wide Tectonite stiles and 5.08 cm (2.00 in) wide Tectonite rails.

The overall area was 1.94 m^2 (21.00 ft^2), the weight of the sample was 79.38 kg (175.00 lbs), providing a net surface weight of 40.92 kg/m^2 (8.33 lbs/ft^2).

A filler wall with an STC of 57 was constructed out of 2 vertical layers of 20.3 cm (8 in) thick solid concrete blocks stacked together, without grout or sealer between the blocks on the source room side and the receive room, forming a single wall 16 inches thick. The perimeters of both sides of the wall were sealed with acoustic caulk and putty. The sample was installed on the source room side of the opening. All exposed edges were then sealed with acoustic seal.

The STC is 38.

Test results are on the following pages.

Submitted by,
NWAA Labs Inc

Ron Sauro
NWAA Labs Inc

NWAA Labs, Inc.

90 Tower Blvd,
Elma, WA 98541
(253)-973-1018

Test #	NWTL 131003-08
Test Date:	3-Oct-13
Area Tested: M^2	1.95
Temperature: °C	23
Barometer: pa	102600
Humidity: %	69

STC	38
OITC	30
DEF	31

Model SR412

Frequency (Hz)	Transmission Loss	Shifted Contour	Deficiencies	S/N Ratio	Notes
50Hz	8			68.3	2
63Hz	13			69.1	2
80Hz	24			69.8	1
100Hz	14			67.1	2
125Hz	27	22	0	58.8	1
160Hz	31	25	0	59.2	1
200Hz	34	28	0	59.4	1
250Hz	35	31	0	58.8	1
315Hz	35	34	0	41.7	2
400Hz	37	37	0	51.2	2
500Hz	38	38	0	52.1	2
630Hz	37	39	2	53.2	
800Hz	33	40	7	38.3	
1000Hz	33	41	8	50.8	
1250Hz	36	42	6	46.4	
1600Hz	38	42	4	46.4	
2000Hz	40	42	2	44.0	2
2500Hz	40	42	2	41.0	2
3150Hz	43	42	0	38.0	2
4000Hz	46	42	0	38.2	2
5000Hz	47			36.3	2
6300Hz	49			34.4	2
8000Hz	53			26.5	2
10000Hz	56			18.7	1

Note 1: Flanking noise limited. True value of Transmission Loss is greater than shown.

Note 2: Flanking noise correction applied.

NWAA Labs, Inc.

90 Tower Blvd,
Elma, WA 98541
(253)-973-1018

Test #	NWTL 131003-08
Test Date:	3-Oct-13
Area Tested: M^2	1.95
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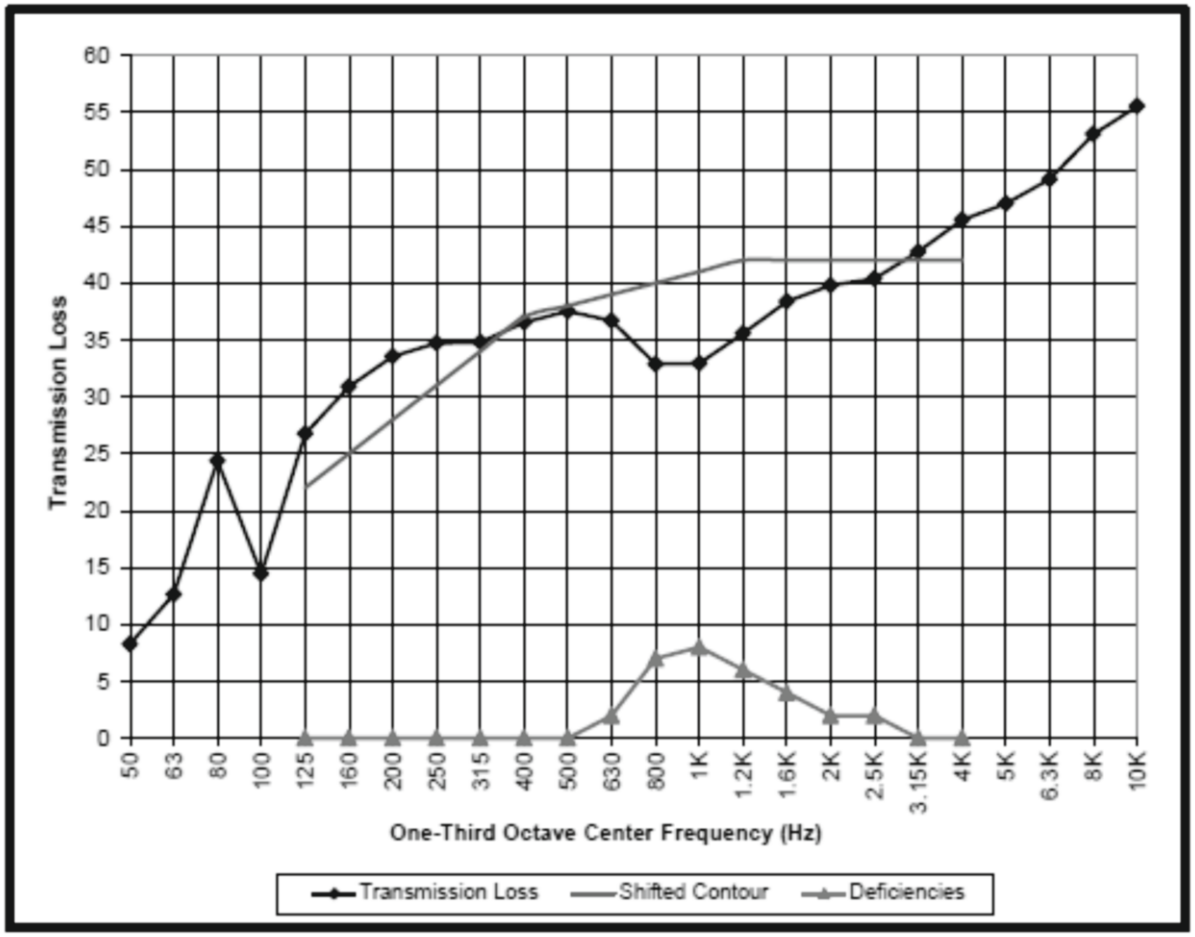
Model SR412



Tony Palmer
Doortech 2000
38 Fairacre Avenue,
Barnstaple,
Devon. EX32 9DF

Tel / Fax: (01271) 345038

EMail: doortech2000@btconnect.com

20th. September 2014

Doortech 2000 **Technical Report Ref: AHP/200914/TR1**

Client: Norsound Ltd.,
Unit 5, Regents Drive,
Prudhoe,
Northumberland NE42 6PX

Requirement:
To assess the likely sound attenuating performance relating to the use of a Warm Springs door tested as described below if the door was to be laboratory tested to the requirements of BS EN ISO 10140-2 : 2010 with results expressed as a single weighted index in accordance with BS EN ISO 717-3 : 1997 as an operational doorset fitted with Norsound acoustic seals as described below.

A/ General:
1/ The Warm Springs door construction specimen, as tested in a *(non operational)* fully caulked condition and as described by reference to NWAA Labs test report # NWTL131007-08 dated 7th. October 2013 for a test date of 3rd. October 2013 provided for a fully caulked performance when tested to the requirements of ASTM Procedure E90-90 with classification (weighted index) in accordance with E413-10.

2/ The 1/3rd. octave Sound Transmission Loss for this test is recorded by reference to the NWTL 131003-08 schedule dated 3rd. October 2013. This document also records a weighted index performance of STC38dB.
NOTE: The 1/3rd. Octave data culled from NWTL 131003-08 schedule dated 3rd. October 2013 has been transferred to a graph (Fig. 1. in this report) and is identified by reference to Door 'A'.

B/ Report:
1/ The only certain way to determine the actual performance of a particular doorset design is to test a specimen in a manner that conforms precisely in all respects to the product intended for use. The following elements can influence performances:

a/ Door size(s).
b/ Door configuration.
c/ Type of glass / area of glazing and beading (sealing) system.
d/ Facing materials.
e/ Type and location of hardware.
f/ Selection and use of sealing systems.
g/ Quality of installation.
h/ The type *(and performance)* of surrounding structure.

2/ Norsound Ltd. have carried out in excess of 250 sound attenuating tests using their sealing systems with a wide range of door constructions. A timber based core door constructions was tested by Norsound by reference to SRL Test report Ref: C/08/5L/20428/R03 dated 1st. April 2009 - Test No. 17 and provided for a fully caulked performance of Rw.40dB *(STC 40dB)*.

3/ The same door construction was re tested as an operational door using Norsound NOR710 perimeter seals at the head and jambs and a NOR 810 series automatic door bottom at the threshold. SRL Test report Ref: C/08/5L/20428/R03 dated 1st. April 2009 - Test No. 18 records a performance of Rw.38dB in this configuration. (See ***Fig. 2***).

4/ The 1/3rd. Octave data determined for the Norsound tests have been transferred to the ***Fig. 1*** graph with the Door 'B' plot showing the fully caulked performance and the Door 'C' plot showing the measured performances for the same door as an operational doorset using the Norsound seals recorded above.

C/ Conclusion:

1/ In our opinion Warm Springs door leaf construction as described by reference to ***A1/*** & ***A2/*** above has the potential to provide for an Rw.35dB *(STC 35dB)* performance if laboratory tested to the requirements of BS EN ISO 10140-2 : 2010, with results expressed as a single weighted index in accordance with BS EN ISO 717-3 : 1997, as an operational door in a single leaf, single swing configuration if fitted with Norsound NOR710 perimeter seals used with a NOR810 automatic door bottom at the threshold where the doorset design is otherwise as illustrated by reference to ***Fig. 2*** of this report.

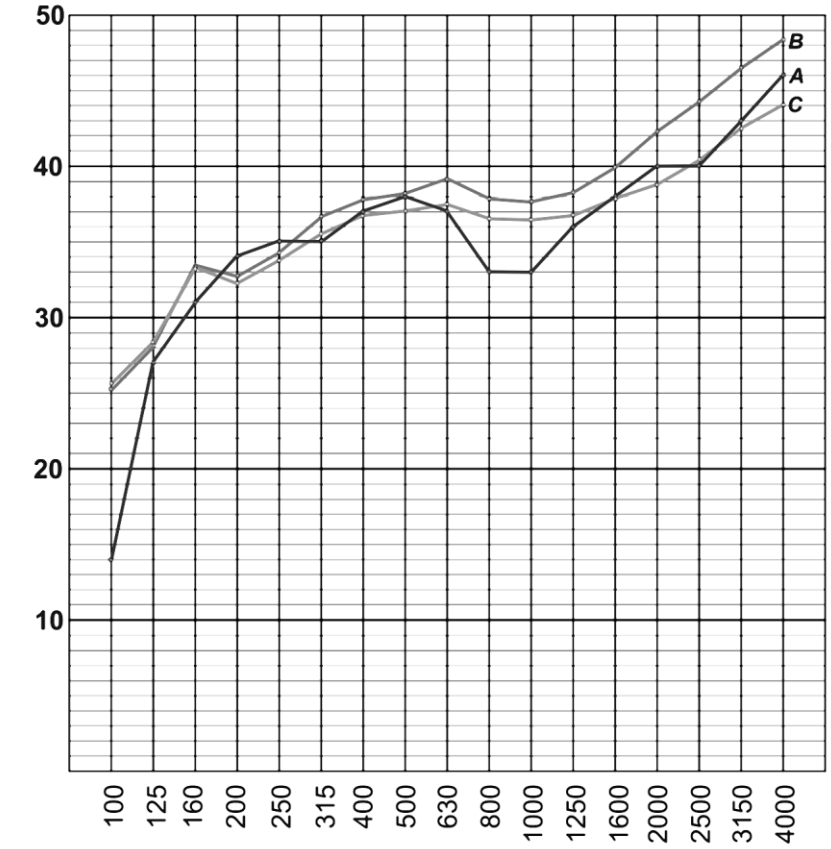
2/ Further, on the basis of other base test data owned by Norsound, we consider that the sound attenuating performance could be further enhanced to Rw.36dB (STC 36dB) for a doorset design as described by reference to ***C1/*** above if an additional bank of Norsound NOR720 perimeter seals were added. (See ***Fig. 3***).

3/ For a single swing, double leaf *(pairs)* configuration, there would be some flanking particularly at the bottom of the meeting stiles that, in our opinion, could reduce performances by approximately Rw.1dB. *(STC 1dB)*. Various meeting stile seal options are illustrated by reference to the Norsound Ltd. Acoustic Technical manual. The choice of meeting stile seals would need to be determined by consideration of the hardware to be used for the doorset with the objective of avoiding any interruption of acoustic seals. The flanking at the threshold could however be reduced by using the Norsound 650 stepped threshold with seal. (See ***Fig. 3***).

4/ This report is restricted to consideration of sound attenuating performances only.

Tony Palmer
Doortech 2000
200914

Comparisons Tests - Warm Springs / Norsound - TR/200914 TR/200914 *Fig.1*

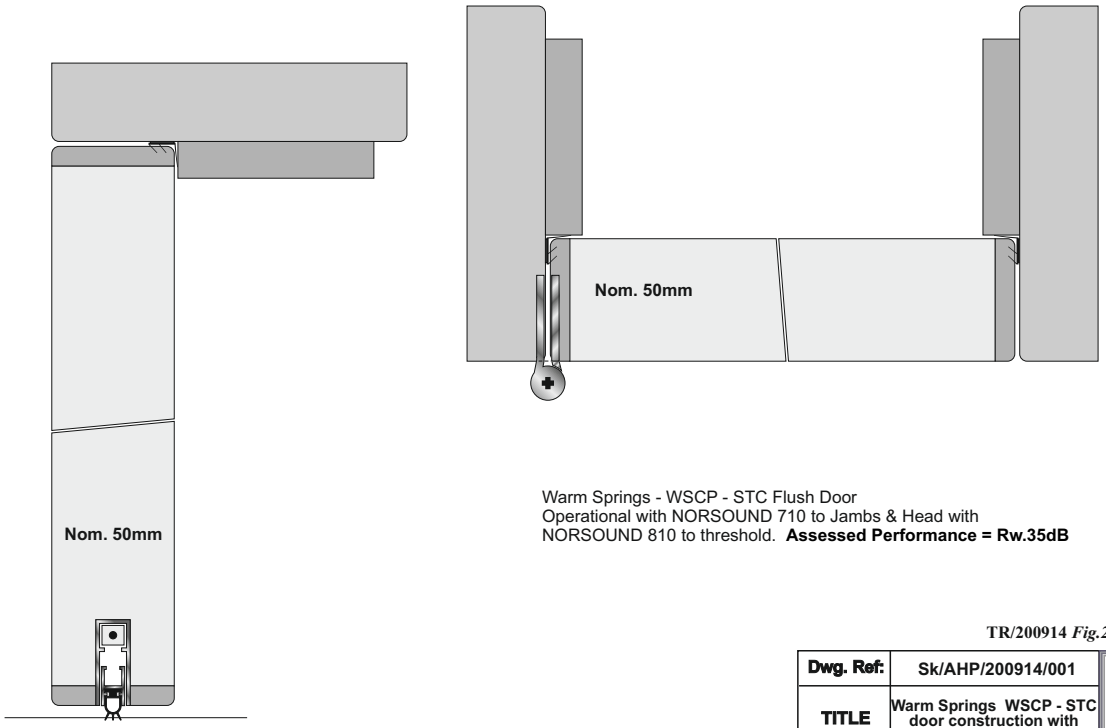


A NWAA Labs Inc. Test NWTL 131003-08 Warm Springs - Fully Caulked.

B SRL Test 20428/R03/ 17 - Norsound Test - Fully Caulked.

C SRL Test 20428/R03/ 18 - Norsound Test - NOR710 / NOR810

Tony Palmer



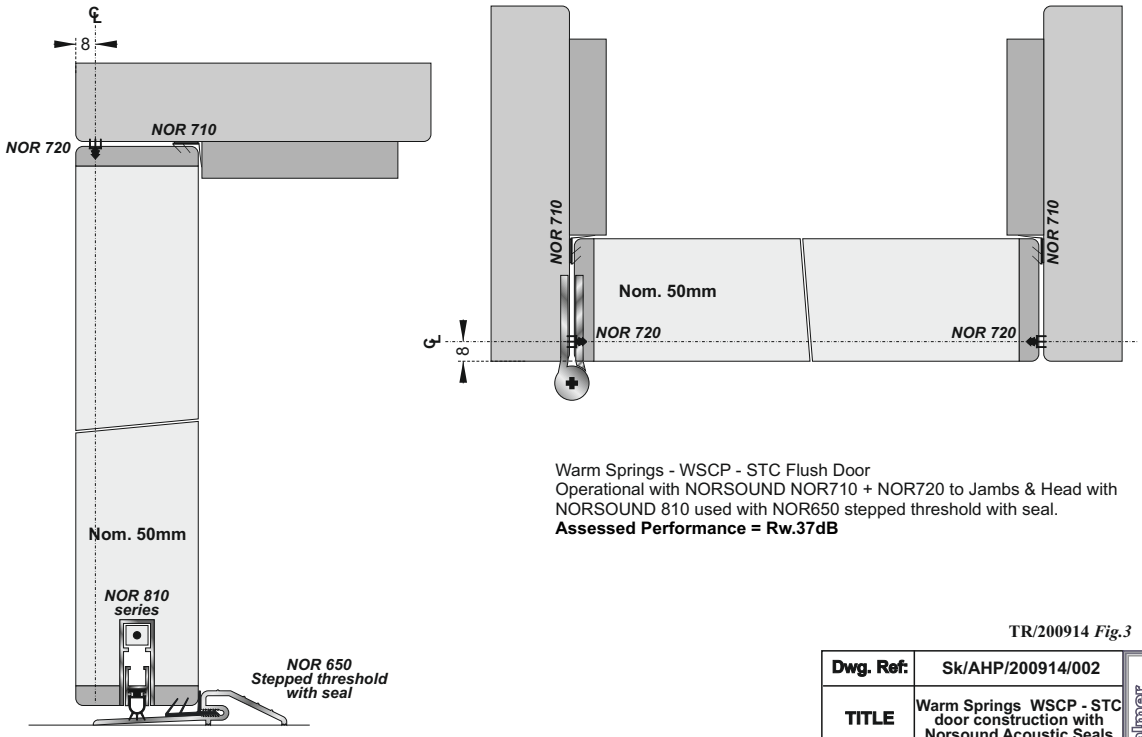
Warm Springs - WSCP - STC Flush Door
Operational with NORSOUND 710 to Jambs & Head with NORSOUND 810 to threshold. **Assessed Performance = Rw.35dB**

TR/200914 *Fig.2*

Dwg. Ref:	**Sk/AHP/200914/001**		
TITLE	**Warm Springs WSCP - STC door construction with Norsound Acoustic Seals**		
Scale	1 : 2	**Date**	20/9/14
Revisions			

Tony Palmer

Tony Palmer



Warm Springs - WSCP - STC Flush Door
Operational with NORSOUND NOR710 + NOR720 to Jambs & Head with NORSOUND 810 used with NOR650 stepped threshold with seal.
Assessed Performance = Rw.37dB

TR/200914 *Fig.3*

Dwg. Ref:	**Sk/AHP/200914/002**		
TITLE	**Warm Springs WSCP - STC door construction with Norsound Acoustic Seals**		
Scale	1 : 2	**Date**	20/9/14
Revisions			

Tony Palmer

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www.intertek.com

Date: April 26, 2016

Mr. Jacob Coochise
Warm Springs Composite Products
PO Box 906
Warm Springs, OR 97761

Subject: Engineering Evaluation of NORSOUND Door Seals – [NOR710, NOR720, and NOR810]

Dear Mr. Coochise,

This letter represents the results of the engineering evaluation of the above referenced subject for use with the Intertek listed Warm Springs 20-90 Minute Fire Door Frame (Spec-ID 14775) in conjunction with the Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset (Spec-ID 35497) to the requirements contained within the UL 10C (2015), NFPA 252 (2012), and CAN/ULC S104 (2015) test standards.

WSCP has requested the use of NORSOUND NOR710 and NOR720 seals with their door and frame assembly consisting of their Intertek listed Warm Springs 20-90 Minute Fire Door Frame (Spec-ID 14775) and their Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset (Spec-ID 35497) as well as the use of the NORSOUND NOR810 Automatic Drop Seal with their Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset (Spec-ID 35497). Data has been supplied to Intertek which includes fire resistance data per BS 476 Part 20 & Part 22 (1987) as well as a chemical product equivalency letter from NORSOUND. Supporting documentation can be found attached to this letter.

Based on the contents of Exova Test Report BMT/FEI/F16033, a chipboard door leaf with Sapele vertical edge lippings was tested for fire resistance in conjunction with a Sapele frame and NORSOUND NOR710 seals applied around the perimeter of the frame, fitted to the upstand of the stop in the frame reveal. The leaf measured 1052mm high by 926mm wide x 54mm thick, and also included a NORSOUND NOR810 Automatic Drop Seal concealed within the bottom of the door. There were also intumescent seals present fitted around the perimeter of the frame. During the fire resistance test, there were no issues observed until 75 minutes and 52 seconds into the test, during which there was intermittent flaming observed at the top hinge corner of the door. This ultimately led to ignition during the cotton pad test just after 76 minutes into the fire resistance test, and the test was subsequently terminated at 78 minutes. There were no issues observed in regard to the NOR810 Automatic Drop Seal during the 78 minute test duration. In addition to the test data referenced above, NORSOUND has provided written confirmation that the NOR710 seal is manufactured from identical materials as the NOR720 seal. Both products are also currently certified under the Exova Certifire program, (the certificate is attached to this letter for reference.

The WSCP 60-90 Minute Single Swing Sound Transmission Doorset (Spec-ID 35497) is slightly greater than 54mm thick, and the core, stiles, and rails are composed of non-combustible mineral material. Positive pressure applications also require the use of intumescent across the full length of the stiles and across the entire length of the top rail. The mineral material present in this door design, as well as within the WSCP 90 minute fire door frame design will provide more stability and reduced thermal transfer to the door system than the consumable wood materials used within the Exova test referenced above, and the amount of consumable edging allowed on the WSCP Sound Transmission Doorset is less than the 6mm thick Sapele lipping used within the Exova test door. The differences in construction referenced above coupled with the requirement of intumescent material around the perimeter of the door for positive pressure applications provides information to justify the use of the NORSOUND NOR710 and NOR720 seals with the Intertek listed Warm Springs 20-90 Minute Fire Door Frame and Intertek listed Warm

Springs 60-90 Minute Single Swing Sound Transmission Doorset assembly per UL 10C (2015), NFPA 252 (2012), and CAN/ULC S104 (2015) for fire resistance applications up to and including 90 minutes. Additionally, the cut-out for the NORSOUND NOR810 falls within the allowable mortise door bottom cut-out limits as specified within the Intertek listing for the Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset and there was no issue in regard to flaming during the 78 minute fire resistance test referenced above; therefore, the use of the NORSOUND NOR810 Automatic Drop Seal will not negatively affect the fire resistance rating of the Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset for a maximum fire endurance duration of 60 minutes.

As a result of the engineering review that is documented above, the use of the NORSOUND NOR710 and NOR720 seals will not negatively affect the fire resistance rating of the WSCP Intertek listed products (used in tandem) that are referenced above for a maximum fire endurance duration of 90 minutes. The use of the NORSOUND NOR810 Automatic Drop Seal will not negatively affect the fire resistance rating of the Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset for a maximum fire endurance duration of 60 minutes.

It should be noted that additional testing is planned on a listed 1-3/4" thick WSCP Door Assembly with a listed steel door frame which incorporates the NOR710, NOR720, NOR810, and NOR650 Threshold Seal for a fire resistance duration of 90 minutes per UL 10C (2015), NFPA 252 (2012), and CAN/ULC S104 (2015). The scope of this upcoming test is to address WSCP Mineral Core Door and Steel Frame applications as well as to provide 90 minute fire resistance data on the NOR810 and NOR650 products.

WSCP has since carried out further successful UL10C test using WSCP STC door construction in conjunction with Norsound gasket products.

See: Intertek Test Report No. 102576295COQ-003A
Report issue date: 27th. June 2016

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Conclusion:

Intertek has conducted this engineering evaluation for WSCP, on their Intertek listed Warm Springs 20-90 Minute Fire Door Frame (Spec-ID 14775) when used in conjunction with their Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset (Spec-ID 35497) to evaluate fire resistance per the UL 10C (2015), NFPA 252 (2012), and CAN/ULC S104 (2015) test standards.

Based on the information contained and referenced herein, it is Intertek's professional judgment based on sound engineering principles that the following is true:

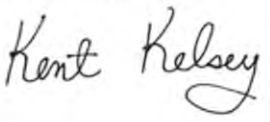
The use of the NORSOUND NOR710 and NOR720 seals will not negatively affect the fire resistance rating of the WSCP Intertek listed products (used in tandem) that are referenced above for a maximum fire resistance duration of 90 minutes.

The use of the NORSOUND NOR810 Automatic Drop Seal will not negatively affect the fire resistance rating of the Intertek listed Warm Springs 60-90 Minute Single Swing Sound Transmission Doorset (Spec-ID 35497) that is referenced above for a maximum fire resistance duration of 60 minutes.

The referenced WSCP Intertek listings will be updated accordingly.

This letter report completes our evaluation.

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact us at Intertek.

Completed by:	Justin Hendricks	Reviewed by:	Kent Kelsey
Title:	Team Leader / Engineer – Evaluation Services	Title:	Project Engineer Evaluation Services
Signature:		Signature	

Attachments:

NORSOUND NOR710 Technical Data Sheet (1 Page)
NORSOUND NOR720 Technical Data Sheet (1 Page)
Equivalency Letter From NORSOUND on NOR710 and NOR720 Products (1 Page)
NORSOUND NOR810 Technical Data Sheet (1 Page)
Exova Certifire Certificate for NORSOUND NOR710 and NOR720 (2 Pages)
Exova Fire Resistance Report BMT/FEI/F16033 for NORSOUND (15 Pages)

Intertek

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CERTIFICATE OF APPROVAL
No CF 629

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

NORSOUND LIMITED

Norseal House, Unit 5 Regents Drive,
Prudhoe, Northumberland NE42 6PX
Tel: 01661 831 311 Fax: 01661 830 099

Have been assessed against the requirements of the Technical Schedule(s) denoted below and are approved for use subject to the conditions appended hereto:

CERTIFIED PRODUCT	TECHNICAL SCHEDULE
Norsound Limited 'NOR710', 'NOR720' Smoke and Acoustic Seals	TS21 The Contribution of Edge Seals to the Control of Smoke Leakage via Door Assemblies

Signed and sealed for and on behalf of CERTIFIRE

Sir Ken Knight
Chairman - Management Council

Issued: 26th February 2009
Reissued: 11th April 2014
Valid to: 10th April 2019

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CERTIFICATE No CF 629
NORSOUND LIMITED

NORSOUND NOR710 & NOR720 SMOKE AND ACOUSTIC SEAL

1. The NOR710 and NOR720 smoke and acoustic seals are both of the compression/deflection (C/D) type. They are used for sealing door assemblies against leakage of ambient temperature smoke, as defined in BS 476: Part 31.1: 1983. They do not contain intumescent material.

2. This certification is designed to demonstrate compliance of the product or system specifically with Approved Document B (England and Wales), Section 2 of the Technical Standards (Scotland), Technical Booklet E (N. Ireland). If compliance is required to other regulatory or guidance documents there may be additional considerations or conflict to be taken into account.'

3. Within BS 5588: Part 1: 1990, a fire door required to resist the passage of smoke at ambient temperature conditions should, when tested in accordance with BS 476: Section 31.1 with the threshold taped and subjected to a pressure of 25 Pa, have a leakage not exceeding 3 $m^3/m/h$. The threshold gap should be sealed either by a seal either with a leakage rate not exceeding 3 $m^3/m/h$ at 25 Pa or just contacting the floor. Where this is impracticable the threshold gap should not exceed 3 mm at any point.

4. The door seals are approved on the basis of:

   i) Initial type testing
   ii) A design appraisal against TS21
   iii) Certification of quality management system to ISO 9001: 2008.
   iv) Inspection and surveillance of factory production control
   v) Audit testing

5. This approval certifies that the above seals are suitable for use with single-acting door assemblies required to restrict smoke leakage at ambient temperatures as defined in Appendix B of Approved Document B, 'Fire Safety' to the Building Regulations 2000. It is applicable to latched and unlatched, single-leaf assemblies consisting of timber faced and edged leaves with timber, cellulosic or mineral cores in timber frames with or without intumescent edge seals (Code ITT and TT respectively). It is only applicable to assemblies that have been approved, or have been shown by test, to achieve the required period of fire resistance.

6. The seals shall be uninterrupted and fixed around the head and vertical edges of the frame.

7. The approval relates to ongoing production. The product purchase order is to be marked with order number and date of production and the CERTIFIRE certificate number will be clearly placed on product literature and website material.

Issued: 26th February 2009
Reissued: 11th April 2014
Valid to: 10th April 2019

WARM SPRINGS
DOOR CORE PRODUCTS

Warm Springs Composite Products
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